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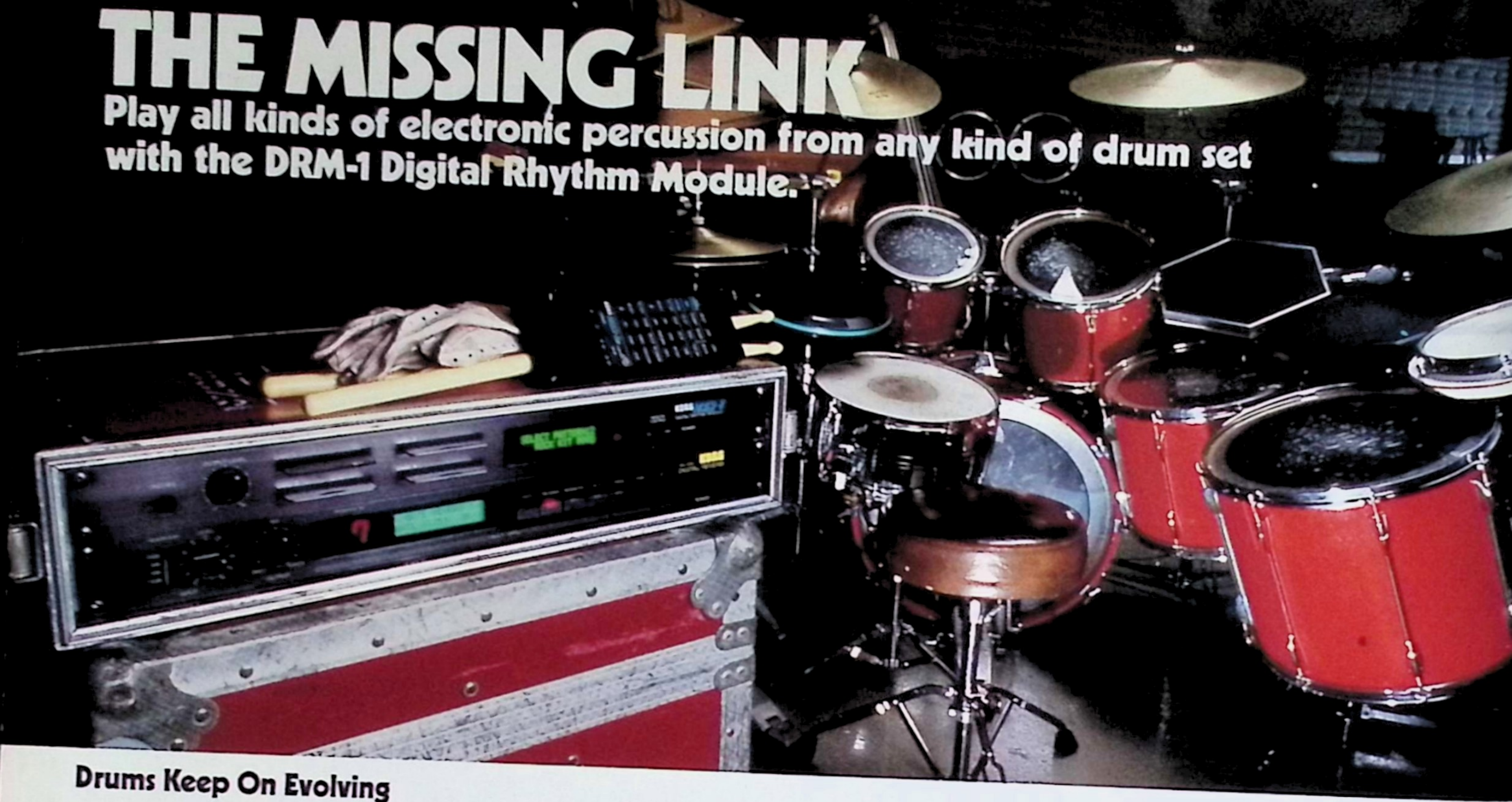

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Vol. 14, No. 4 (Issue #144) April 1988

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F R O M T H E P U B L I S H E R

Make Some Noise

THIS MONTH'S ARTICLE ON SAMPLING SOUND EFFECTS (PAGE 52) SET ME thinking. I know many of you would like to make more money with your musical talents. After all, you've probably spent a decade or more mastering your instrument, learning music theory, and acquiring an understanding of electronic technology. If you're like most of us, the first thing that comes to mind is playing in a band and getting a recording contract.

But there are a lot of other opportunities out there that you may be missing. Frankly, the competition is pretty stiff among those who would like to be recording artists, so the cards are stacked against you. But that's no reason to dump music in favor of construction work or door-to-door sales.

Have you thought about teaching? In a school, through a music store, even privately. Or how about being a sales representative for a keyboard company? If you're heavily into electronics, you could consider working in a repair shop, or going on the road as a technician with an established band. (Not so glamorous, but a great way to learn the ropes.) In our Feb. '88 issue, Bob Moog explained in detail how to become an instrument design engineer for a manufacturer.

Performance opportunities abound too, though not necessarily before screaming hordes. Providing sound effects for other people's recording projects is a great specialty, and you don't have to live in New York or L.A. to get into it. Locally produced commercials and TV shows need soundtracks. And if you're willing to broaden your horizons a bit, you might find ways to polish your stage presence and earn a few bucks playing in lounges, service clubs, and malls, or for vocal groups, church events, and theatrical presentations.

* * * *

Have you noticed our Reader Tips column? This month it's on page 18. Great stuff, right? But pretty specialized. Nothing in there that applies to your equipment? Chances are, other readers with the same equipment are feeling the same way. Why not help them out? Send us a description of the shortcuts you've developed, the new applications you've uncovered. If we use your material, you'll be internationally famous (for a minute or two, at least) and $25 richer.

Send us a brief, clearly written explanation of your discovery or technique. Be sure to include all the relevant details—parameter settings, signal routings, whatever. Send it to *Keyboard* Reader Tips, 20085 Stevens Creek, Cupertino, CA 95014.

* * * *

I'd like you to extend a warm welcome to *Keyboard's* new editorial assistant, **Mark Vail.** Mark comes to us with a master's degree in electronic music from Mills College in Oakland, California. His performing work as a keyboard player has been mainly in experimental music, but in his spare time he and his wife sing classical music (Brahms, Mendelssohn) with a local choir. He's sure to be a valuable addition to our multi-talented staff.

—JC

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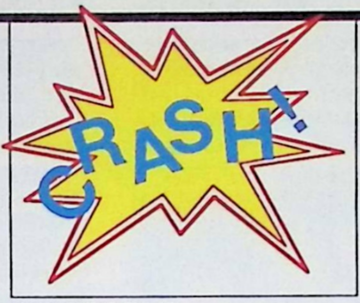

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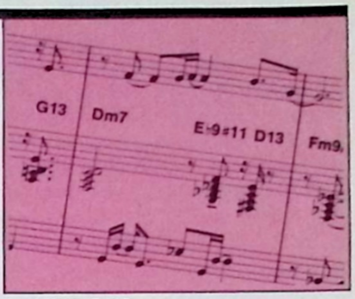

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Sound advice on how to capture quality samples and use them effectively in motion picture soundtracks. Plus tips on where to look for jobs that challenge your sampling expertise.

66 SOUNDPAGE: 'VIVO NO. 385 IN F MAJOR'
The classics have been synthesized before. But when jazz and pop music giant Bob James did this arrangement of a Scarlatti sonata, he had a point to prove: That even the most challenging keyboard repertoire of the past can be galvanized by the right combination of technique and computer sequencing.

74 ARRANGING: PRINCIPLES & PRACTICES
Arrangers have the key that frees the magic within each great song. From chord voicings and orchestration to melodic, rhythmic, and metrical variation, the tricks of the trade are hard to perfect but, as a respected master of the arranging game points out in this article, simple to understand.

Cover photo by **Ann Summa**: Keith Emerson with Korg Sampled Grand, Los Angeles, Jan. 1988.

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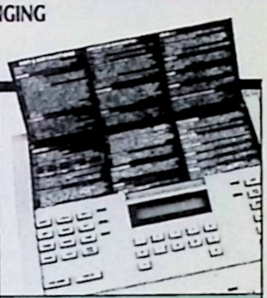
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LETTERS TO THE EDITOR

Stewart Copeland

[*Our Feb. '88 cover story interview with former Police drummer Stewart Copeland seems to have raised a hackle here and there. Most of the letters we received took issue with Copeland's opinion that drummers do a better job of programming rhythm patterns than keyboardists, and his advice that musicians shouldn't bother to sample unless they have top-of-the-line equipment at their disposal. Here's a taste.*]

I'll listen to Stewart Copeland's advice on "building the perfect beat," but when that advice becomes obviously offensive to keyboard players, forget it. I began the article with an open mind, but was soon confronted with the fact that Copeland is an egotist who thinks that "whenever keyboard players try to program drum fills, they're not as effective." I couldn't disagree with him more. As to Copeland's "hiccup theory," asymmetrical meters don't always sound like they're "stopping and starting up again every bar." I have written and listened to many pieces of music in asymmetrical time signatures, and they've been wonderful. Because of the popularity of 4/4 as a meter, people seem to look down on odd time signatures, when actually a composition doesn't have to be in 4/4 to be interesting. I respect Copeland for the position he has attained and maintained in music, but some of his good fortune may have gone to his head.

Joseph Zobkiw
Berklee College Of Music
Boston, MA

You almost convinced me that Stewart Copeland is a thinking musician, but by stating, "Don't spend your money on a sampler unless you get the best," and, "Sampling is the flavor of the month," he confirms that joke about a band being three musicians and a drummer. For the 99 percent of us who are doing live gigs instead of movie scores, our "cheap" samplers work great. How many samples did Copeland use on his last movie project? It's a safe bet that he wouldn't be doing movie scores without making use of this flavor.

Larry Byrd
Pine Bluff, AR

Stewart Copeland is one of the most creative drummers on the rock scene today, but he seems to be so high on himself that he doesn't realize how much crap flies out of his mouth. In saying that "a sampler is only worth anything at all if it's top grade," Copeland proves that he obviously doesn't read *Keyboard*. If he did, he would have seen your valuable articles by Terry Fryer and other sampling honchos, which explain how to get high-quality samples out of what Copeland might call "worthless samplers." Jimmy Jam and Terry Lewis can afford Emulators, Fairlights, and Synclaviers, but they choose to use an Ensoniq Mirage for their drums and other samples. Why? Because they're creative. Which brings me to my point: Any sampler is a tool that can be used creatively to its fullest potential. Finally, as to Copeland's advice to "get the drummer to write the drum patterns," I'm a drummer and a keyboardist, and I find that a lot of keyboard players give their drum patterns fresh new life because they *don't* think like drummers. Copeland needs to stop fondling his Fairlight and check out David Frank's drum patterns with the System.

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OPCODE SYNC BOX

Kevin Ryan
Jamaica, NY

Accordion Mania

[*Accordionists throughout the world are still voicing their enthusiasm for our Dec. '87 cover story on the resurgence of their instrument.*]

As winner of two bronze medals for the U.S. in classical accordion and third in popular accordion in the Coupe Mondiale international competition, I am glad to see the accordion getting some recognition for music other than polkas. A good accordion doesn't have that thin, tinny sound that most synthesizers call their accordion patch. In fact, many synthesizer patches called "accordion" actually sound closer to a $50 Melodica than to a $7,000-12,000 hand-made accordion. Even a nicely sampled accordion sound can't do justice to the expressiveness of a real accordion with built-in acoustic stereo that needs no electronic panning. The concert accordions that are winning competitions these days are very sophisticated and sound more like pipe organs than like reed instruments. The modern accordion has incredible speed, and its players can reach large intervals with a small span of the hand. These instruments have free-bass systems in the left hand in addition to the standard bass-chord configurations, often allowing performers to play directly off of piano or organ music. With these improvements, accordionists can play counter-melodies and big open-voiced punches, or even double the right hand.

As a result of all this, the modern accordionist can function as a great synthesist. He has two keyboards built into one portable instrument. Unlike many pianists, he has a working knowledge of when and how to make register changes. And he has a good continuous controller.

I would like to encourage synthesists to open their eyes to the musical possibilities of the accordion. I also urge the major accordion manufacturers, and possibly synthesizer manufacturers as well, to do more research toward working out the bugs in the MIDI accordion, adding touch sensitivity, aftertouch, the ability to use the bellows as a continuous controller, and so forth, to create a good alternate keyboard controller out of the already good piano style and/or button system accordions that are now available.

Jeff Lisenby
Nashville, TN

Deciphering Buzzwords

Thank you, thank you, thank you for Kevin Looney's Guest Editorial on misleading buzzwords [Feb. '88]. For too long, less than scrupulous marketers have been bombarding us with high-tech buzzwords that have little meaning in relation to the products they describe. One point raised by Kevin needs clarification, however. As the author of Dr. T's Algorithmic Composer, which Jan Hammer used as an aid in scoring several episodes of *Miami Vice*, I have always been careful not to use the term "artificial intelligence" in describing my work, either in the program's documentation or in Dr. T's advertising. As Kevin stated, the program's guts are essentially a combination of predetermined rules and probabilities which reflect my personal prejudices as a composer. (In fact, the primary inspiration for the program was a column by Roger Powell that appeared in *Keyboard* sometime in the late '70s on automatic improvisation with a modular synthesizer.) While other composition programs on the market may or may not use some of the results of AI research, my program is no more "intelligent" than a toaster oven or a random patch generator.

Jim Johnson
Chandler, AZ

Steve Roach

I am often disturbed by articles in your magazine, and a typical one was the story on Steve Roach [Feb. '88]. Having heard some of his music, I was amazed—not at his talent, but at his ability to get media attention. This person has been the focus of several feature articles recently, all of which say about the same thing. Based on those titles of his that I have heard, I wonder what all the fuss is about.

What really summed this story up for me was to learn that Roach is studying [the harmonic studies of Vincent] Persichetti. Our champion of new music is studying Persichetti? Learning to play two chords at the same time? The same Persichetti who wrote twentieth-century harmony books that any college composition student studies? Talk about retrograde motion! And bi-tonal chords! What new levels of complexity! Perhaps he might listen to a piece by Milhaud, or even Stravinsky. He might discover modal harmony—maybe even chords built on intervals other than thirds. He might even—dare I say it?—unearth serial techniques! Ah, to be naive enough to feel that playing around with bitonality is "complex harmony," to know so little of music history that you can make little new age tidbits and feel like you're doing important musical research!

Speaking of musical research, Roach doesn't seem to have discovered much about Australian aboriginal music during his epochal trip to the southern hemisphere, other than through playing some sandstone and hearing a bird with some expensive reverb. I suppose the music he heard, if he heard any at all, was simply too pallid for his obviously advanced ear, since most "native instruments" are not electronic.

Let us hype—oops, I mean hope—that your article serves its purpose of garnering sales for Roach's drones and ostinatos. Hopefully he'll use his money wisely, and maybe buy a text on nineteenth-century harmony. Who knows? On a future album he might even modulate to a new key during one of his pieces!

Bill Randall
Studio City, CA

Thank you so very much for your great article on Steve Roach. I have a soft spot for Steve and his music. He touches very quiet and tender visions with his beautiful fantasies. He is one of my favorites in the new age scene. Dreams and visions, and love always.

Nedd M. Behm
Chicago, IL

More On DAT

[Our Nov. '87 Guest Editorial tackled the touchy issue of whether notches should be inserted on commercial CDs to make it impossible to record them onto DATs (digital audio tapes). Most of the response we printed in our Jan. '88 issue opposed the idea. This month, we hear from a dissenting voice.]

I am surprised that very few readers of *Keyboard*, nearly all of whom are musicians, favor copy protection of DAT recorders. It is true that the notch filter protection scheme is particularly bad, since it will adversely affect the sound quality of the recording. Also, it could easily be cracked. Building a DAT-buster device would not be difficult for those who are experienced in digital circuit design. In fact, if notch filter legislation is passed, its appearance would be inevitable.

Even so, the concept of record companies protecting the artists' recordings is in the musicians' best interest. Piracy of LPs, CDs, and analog cassettes today accounts for millions of dollars lost by record companies each year, resulting in less royalties for artists. The number of *Keyboard* readers who receive royalties is probably not all that large. But the number of readers who are striving for a record deal is likely very large. If record companies don't make money, fewer artists are going to have a chance to get that record deal. As musicians, we must respect everyone's freedom of expression. As people in a democratic society, we must also respect each other's rights as professionals.

Peter Sturge
New York, NY

Monk Piano Competition

Thank you for Bob Doerschuk's review of the Thelonious Monk International Jazz Piano Competition [Feb. '88]. As one of the contestants, I appreciate the points you brought up about introductions, individuality, time limits, and restrictions on applause; I'm sure that many other non-finalists agree. You also spoke for me in saying that the competition is an idea whose time has come. I'm all for elevating and advancing the music, and I'll be back next year—a year older and a year wiser. I hope the same can be said for the competition itself.

David Ake
Hollywood, CA

Krystian Zimerman

I enjoyed the insight and intimate attitude that Krystian Zimerman displayed toward the piano in his Dec. '87 interview with *Keyboard*. However, I was annoyed by his orgulous assertions that "the problem [with pianos] is piano technicians" and "you have hardly anybody in America who is really an excellent piano technician." I personally know more than half a dozen very excellent piano technicians in New York State alone. I include myself among them. Most of my life has been spent on the reconstruction of early American pianos, such as Mason & Hamlin, Steinway, Knabe, Baldwin, and many others. These instruments are the finest ever built, and when properly reconstructed, they offer the Zimermans of the world unsurpassed quality. Zimerman's statements reveal a lack of knowledge toward one of the finest groups of people in the piano world, and may help generate an undesirable opinion toward many technicians whose names should also appear on the concert program. Though I credit Zimerman for stating that piano technology is "a field that has been a little bit undervalued," the fact is that it is a *lot* undervalued.

Daniel Fusco, RTT
Grand Workshoppe Piano Co.
New Hartford, NY

Move Over, Eric Clapton

[Ralph Garcia's Jan. '88 letter praised our Nov. '87 cover subject, Todd Rundgren, to the point of asking, "Could it be that Todd is

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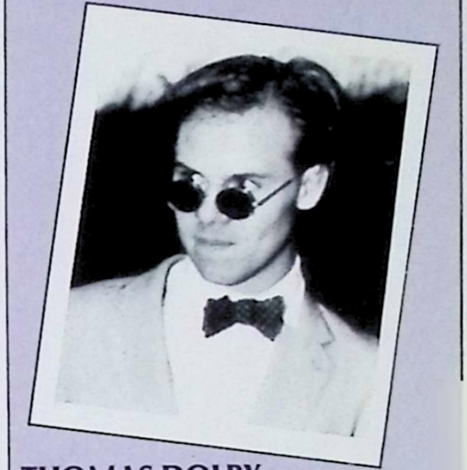
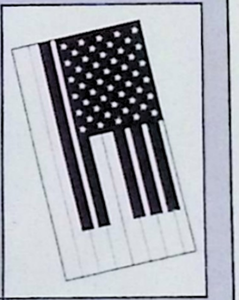
NEXT MONTH IN KEYBOARD



THOMAS DOLBY
Behind The Wheel On 'Buick'



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Keyboard Magazine

"[The Kawai K5] can compete directly with the DX7II's and the D50's as a performance instrument which is as exciting to play as it is to program."
Paul Wiffen
Sound on Sound

"Additive synthesis has the potential to create an infinite variety of timbres, and the K5 presents additive synthesis in a very intelligible way. With it's flexible multi-timbral features and multiple outputs, the K5 is a monster tool for Midi sequencing."
Bob O'Donnell
Music Technology Magazine

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Godd?" This suggestion echoed Eddie Schmidt's assertion in the Feb. '88 Letters column that "Weird Al Yankovic is God." Apparently there are others who feel that Rundgren and Yankovic aren't quite ready for deification.]

Rundgren is not the singing saviour. Sure, the members of Utopia used to say things like "I can change the world with just this guitar." But in your interview, Rundgren says, "I've never enjoyed proselytizing . . . and in cases where I've lapsed into it, I think I've regretted it." In "Miracle At The Bazaar," on *A Capella*, he says, "There is no god but God"—*not* "There is no Godd but Todd." Garcia and others like him should find a more worthy value system elsewhere.

Feizi Rohde
Winston-Salem, NC

I must protest in the strongest possible terms your decision to print letters claiming that Rundgren and Yankovic are God. To your Christian readers the Name of the Creator of the universe is to be spoken and written with great reverence, and is not to be used to magnify the names of pop musicians or anyone else. It is a source of great distress to us to see His name bandied about so thoughtlessly. *Keyboard* is far and away my favorite music magazine, but if you print any more letters or articles that make light of the Name of the Lord God, I will immediately cancel my subscription.

Patrick Bryant
Sargent, GA

Quick Disks

[Several times in our Keyboard Report section—most recently in Dominic Milano's Dec. '87 look at the Akai S700 sampler—our reviewers have voiced their displeasure with 2.8" quick disks. This month we received a letter from a quick disk defender.]

You've gone too far! I, for one, really like those quick disks. Dominic is absolutely correct in assessing how much money one can throw at electronic manufacturers' feet every year. But it's not how much you spend, or how disappointing or cumbersome a product may be, that ultimately matters; the application should be the overall consideration. My load time is minimal. I consider each MIDI module a separate instrument. For studio work, time is less an issue for me than it is onstage. I can exploit the instrument in several ways. Additionally, I can load any type of sound in any format without having banked eight logdrums followed by eight congas when all I want is one simple Rhodes. Finally, I save myself the embarrassment of showing off a 3.5" spread sheet and trying to default with a 3.5" floppy multi-oboe disk.

J. T. Price
Chicago, IL

Analog/Digital Definitions

Erol Ogut's letter [Dec. '87] indicates some confusion about my original remarks [Oct. '87] concerning the alleged distinction between analog and digital sounds. I was trying to point out that part of the DX7 is very analog in nature. Ogut is correct in stating that the DX7 processes numbers with algorithms and converts them into analog form at the output. The analog sine waves I was talking about reside in the digital domain. They are defined and described by these digital algorithms. The sound of FM synthesis could also be created with pure analog hardware. Take a huge modular synthesizer with lots of oscillators, envelope generators, patch cords, etc., set all the oscillators for sine waves, and with lots of work you could make a DX7-type voice. Obviously this is not a practical way to build an instrument, because of the huge amount of hardware required and the difficulty of switching patches. It makes much more sense to use a computer to do all this instead. Numerical routines are written which accomplish exactly the same thing as a few analog sine wave oscillators modulating each other, only much more accurately and with much greater flexibility. Hence, FM synthesis was accomplished from the beginning in the digital domain.

Computers are being used to simulate all kinds of things today. There are flight simulator programs that allow a pilot to experience flying, in the *digital domain*. Obviously we don't consider flying a digital experience just because it can be done on a computer. In the same sense, we shouldn't describe a sound as digital just because it is created on a computer-based instrument. My point is that we need to look at the sound-generating processes of our instruments in order to understand and describe what they do. "Digital sound" means nothing now, as nearly all the hardware is digital. Even the traditional analog subtractive synthesis sound can be produced entirely in software running a computer. The DX7 sound is FM, which means sine waves modulating sine waves, and I still think of a sine wave as analog, even if it exists in digital numeric form.

Ken Bauer
Brea, CA

Corrections

I appreciate your review of my book, *The Source* [Feb. '88], but you printed the wrong address as to where to send for the book. *The Source* is now being distributed by Hal Leonard Publishing Corp., Box 13819, Milwaukee, WI 53213.

Steve Barta
Colorado Springs, CO

[We also juggled the address of Pindrop, distributor of David First's The Strange Over, *in our Feb. '88 installment of Notes From The Underground. The correct address is: Box 102, 496 La Guardia Place, New York, NY 10012. Apologies to William L. Fowler for leaving out the last of the five examples set to run in his Feb. '88 Applied Theory column.]*

The Doc's Dilemma

Your Feb. '88 issue has an ad featuring a cassette tape of "five solid hours of Mac (Dr. John) Rebennack . . . impairing his vast knowledge of the traditional piano styles."

Continued on page 162

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GUEST EDITORIAL

ROBERT WEHRMAN

DISPOSABLE MUSIC: PASSING SYMPTOM OR FATAL AFFLICTION?

SCIENTISTS ARE SOUNDING THE ALARM about an infectious new disease that is making its way through the music industry. Disposable Music Syndrome, or DMS, has the potential to corrupt and—dramatic as this may sound—ultimately destroy our art.

Disposable music? Well, why not? We have disposable clothing, dishes, diapers, and marriages, so why not music? Questions like these, unfortunately, are often early signs of affliction. A healthier question is, "What is DMS, and how can I avoid it?"

For many reasons, composers are failing to write down their music. In fact, many can't even read music! And they're getting away with it. If music isn't written down, no one but the composer can play it. When that person dies, so does the music; it is disposed of along with the body. Suppose that no music were notated after 1988. Musicians who are solely performers would not be able to program any new music! An ensemble like the Kronos Quartet, which is known for its contemporary repertoire, could not exist. If your response to this scenario is, "So what? I can't read music, and I get along fine," you are a disgrace to your musical peers. You are not only a carrier of DMS but also one of the causes.

It's especially sad to think that some of our best pop players can't read a note. I was once in a recording session with the late pianist Victor Feldman. There were no written parts. Upon hearing the tune one time, Victor apologized to everyone and stopped the session to spend ten minutes writing out his part. He was the only player there, besides myself, who could read, and he wanted to get his track right the first time. The composer, a rich and famous songwriter, couldn't have written the part to save her life!

In the days before sequencers, composers had to notate their music. Whether the notes expressed half-formed musical ideas or the final product, composers wrote everything down on paper; that was the only way they could get their music played. Because of notation, we can not only play music written hundreds of years ago, but also follow a composer's thought process—the Beethoven sketchbooks are a prime testament to this. Today, sequence editing destroys the intermediate stages in the process of creation.

Don't get me wrong; I love my sequencers (I have more than one, which is a symptom of another illness—LED mania). But sequencers, being good robots, make it easy for us to become lazy. Of course, you could record the sequence on tape and retain a magnetic record of the music. But while it's wonderful to be able to play your music for friends or send it off to a record company, the hitch is that the shelf life of magnetic tape is about 25 years. For optical media, it may be even less. If Beethoven had recorded his music on tape, floppy disk, or CD instead of writing it down, all record of his work would have been lost by 1852!

As many of you know, these days you can send your sequence via MIDI to a music transcribing program in your personal computer and, unlike the laborious process of pencil-to-paper-to-publishing-house notation, get your composition printed up in no time. But while this may sound like a sure-fire cure for DMS, there are at least four problems.

First, if there are only a few people out there who can read your music, what good will a printout be? Second, there hasn't been a software program created that can do all the things you can do by hand. Notational software can be useful as an aid to notating complex rhythms, but it still falls short when it comes to printing stems without noteheads, noteheads alone, non-metered music, and other forms of contemporary notation. How do you notate complex polymeters or reverb intensity changes when your software won't comply? Are you willing to let the limits of a software program control your music?

The third drawback involves some subjective reasoning. If you can write only what you can play, no matter how great a player you are, you have created a handicap for yourself as a composer. *If you can't write away from the keyboard, you will never be a great composer.* "Ah!" you say, "What about Stravinsky, who always wrote at the piano?" Real composers, regardless of their playing skills, can write a virtuoso part for any instrument without playing a note. They aren't limited to writing at the keyboard. Strangely, Beethoven used to write at the piano even after he went deaf. But he also used to write in coffee houses, during his long daily walks, and while sitting on the john. He wasn't married to the keyboard. And though it's commonly held that Mozart wrote no sketches—that his scores, as we know them today, were completely worked out in his head before they were notated—there is now evidence that his wife Constance burned his sketches to make his finished works more valuable and to further enhance his reputation as a genius. So there is a big difference between using the keyboard as a tool, to check out your harmonies, and using it as a crutch, to make up for poor writing skills. A good composer can sit down, pen in hand, and notate anything that comes to mind.

Fourth: There is a certain development process that occurs while you're notating a composition. This process is especially important if you intend to write something more complex than a song. Producing a good score takes lots of sketching, often through a trial-and-error approach. You can, of course, sketch music with a sequencer, and, in time, create a finished work. But music is a temporal art; it requires time to exist. Working out an advanced form on a sequencer means that you have to listen to each section over and over again. This takes time. Music notation, on the other hand, is a spatial art. Once it's written, it doesn't require much time at all to be useful; it merely requires space. You can look at a phrase or verse and, in a fraction of the time it takes to play the music, hear the whole section. It's wonderful to hear your music while you create it, but it's also great to hear music with your eyes. Next to your ears, your eyes are the most valuable tool you possess. So why not use them? Not even J.S. Bach could have played a finished work into a sequencer, and he is considered one of the world's greatest improvisers. Bach worked out his ideas on paper first, and so should you.

Society has made it too easy for us to throw things away. Today there's a strong desire among the rising ranks of the middle class to have a new car, a new job, a new house, a new keyboard, the newest album. As soon as something new comes along, we simply must have it. We discard the old; we dispose of it. This consumerism has infected even the way that we think about music. Many of us could care less about writing music for posterity. We write something for a specific show or tour, and, unless it's written

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Bob Wehrman is a composer, synthesist, and "musecologist"—in his words, "someone who studies the health and environmental condition of our art." He currently works as a clinician for Ensoniq.

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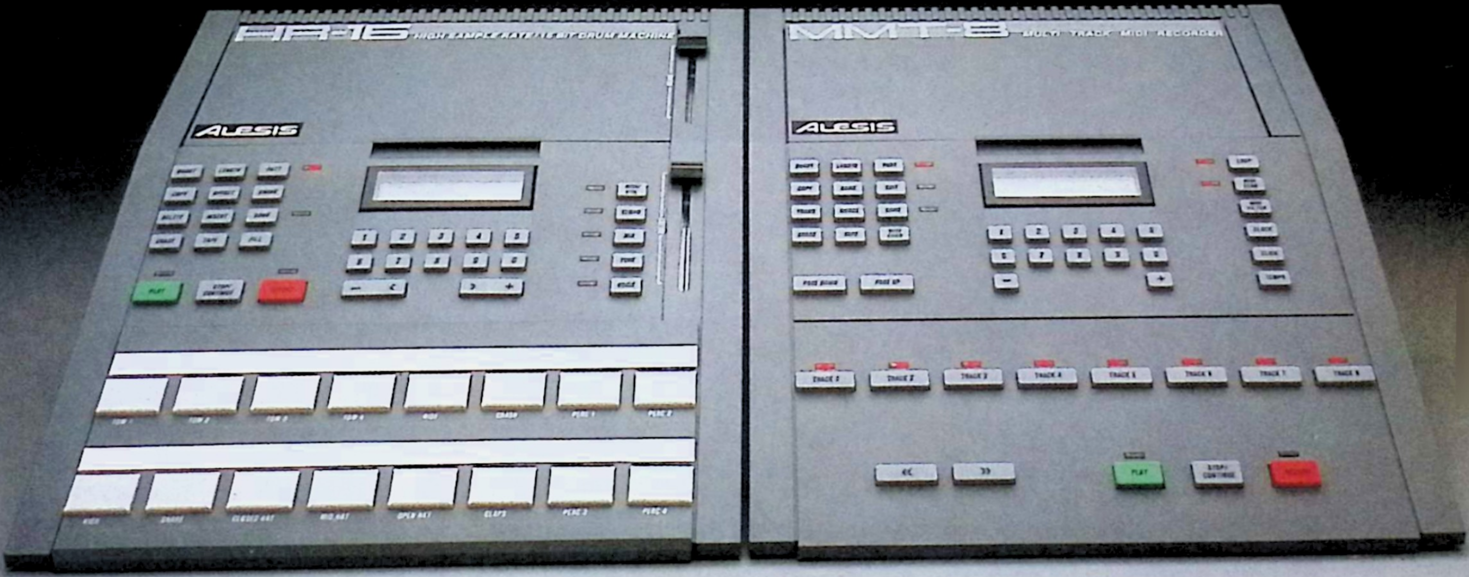
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LOS ANGELES: Alesis Corp., P.O. Box 3908, Los Angeles, CA 90078 **LONDON:** 6, Letchworth Business Center, Avenue One, Letchworth, Hertfordshire SG6 2 HR down, in a few years it will be tucked away and forgotten, never to be played again. That is, unless you're lucky enough to have your tune turned into a moldy oldy. But unfortunately, if you try to find sheet music for these old tunes, chances are good you'll be told, "Sorry, that music is out of print." Publishers cause DMS too.

We live in an era in which the performer is king and composers are second-class citizens. Would you buy a recording of me singing John Lennon songs when you could buy one of John performing them himself? It doesn't matter that he wrote the music; you're buying the performance. Today it is next to impossible to get one's music played by orchestras. Many classical composers are crossing over into commercial music just to get their music recorded. Very few "great performers" are commissioning new works. Orchestra music directors are afraid to schedule anything new and shocking; they're afraid that new works will drive away their already dying audiences. This causes composers to withdraw into the private world of MIDI performances at home. If nobody else is going to play your music, why write it down?

This isn't the first time that composers have disregarded the future. In the Baroque period, audiences never wanted to hear the same piece twice. Music was written for a specific performance or church service, and then set aside. One theory is that because of the rush, composers used a kind of shorthand notation. Others think that since ornaments were meant to be improvised embellishments, they couldn't be notated. In either case, the result is much discourse on the correct way to play Baroque ornaments. (Do you improvise, or follow the editor's instructions?) Year-long university courses are dedicated to the subject. And what student hasn't struggled his or her way through a two-year course in choral harmony, a.k.a. Figured Bass 101? Many Baroque composers wrote exclusively in figured bass. It was as common in that time as lead sheets are today. It's still quite a chore to learn figured bass.

There is another cause of DMS. In contemporary music, traditional notation often lacks the ability to communicate your wishes as a composer. For example, how do you notate music that has no beginning or end? George Crumb solved this problem by creating a circular staff. In "The Magic Circle Of Infinity" movement from his *Makrokosmos, Vol. I: Twelve Pieces After The Zodiac For Amplified Piano*, you start playing somewhere in the circle, and continue around and around.

Now, before you write yourself off as a victim of DMS, let's outline a plan of attack. First, you must create a personal need for notation. If you want to be a composer (and you're not a composer if you don't write down your music), find a medium that works for you and stick with it. Cultivate the desire to have your music performed by others. Plan for your own immortality. Often the difference between a hero and a nobody is that the hero wrote something down.

Learn to write music. It's not any harder than doing your own taxes. People are often surprised to find that music is easier to write than it is to read. If you don't think that *your* music can be notated, spend some time studying scores. Some of the most bizarre music ever heard has found its way into print. Study the scores of Frank Zappa, Karlheinz Stockhausen, Krzysztof Penderecki, George Crumb, Laurie Anderson, and others.

Despite what I said earlier about MIDI music transcribers, they do offer some benefits. Let technology work for you. If you find a notation program that you like, use it—that would be better than not writing anything down. Notational software can be especially handy for creating your own blank manuscript paper, if you have special needs. But remember, there are pitfalls; these programs don't follow all the rules of notation, and seem to be easier to use if you know how to notate by hand. Software transcribers do not supply free lunches to inept musicians.

Wendy Carlos, in her Nov. '86 interview with *Keyboard*, commented, "This is the best time ever to be a composer." She's right. Look at all the wonderful tools we have: RDATs, CDs, synthesizers, samplers, sequencers, desktop publishing—the list goes on. But where's the music? Is it being disposed of as fast as it gets created? What good are any of these tools if you can't get your music performed? All this technology can greatly contribute to our art, but it can also destroy it. If composers fail to write down their creations for others to play, music will ultimately fall victim to DMS. Carl Sagan, in a speech given at the University of California at Santa Cruz, said, "It's almost as if God said, 'You have a choice: Destroy yourselves, or go to the stars!'" The choice is yours. ■

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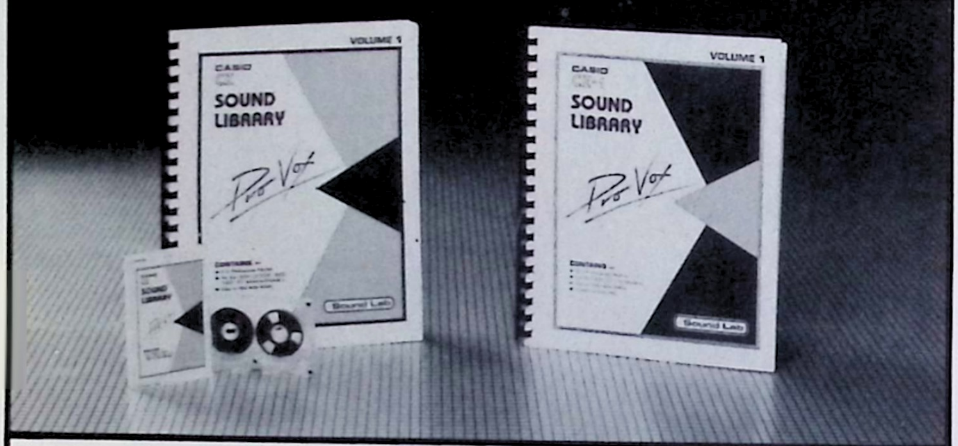

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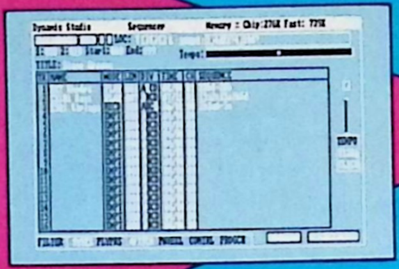
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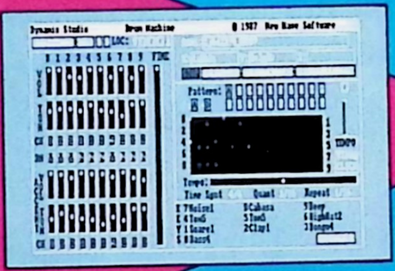
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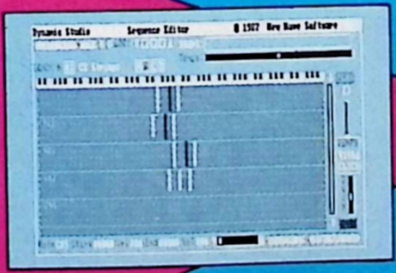
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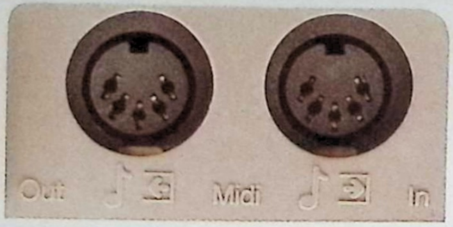

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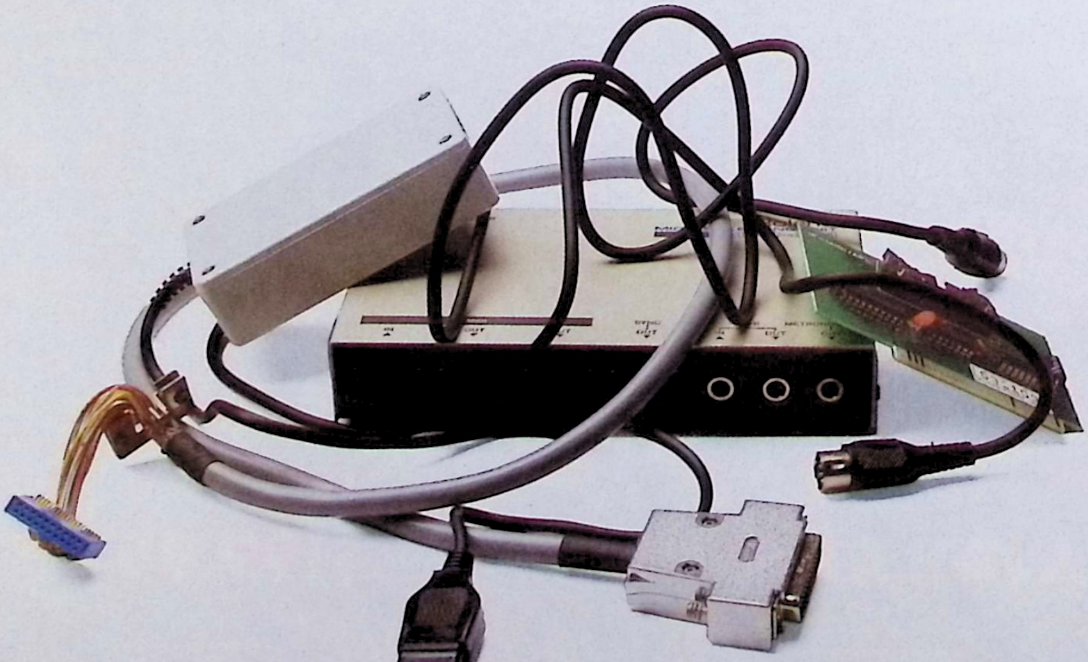

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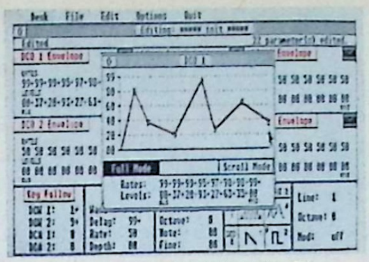

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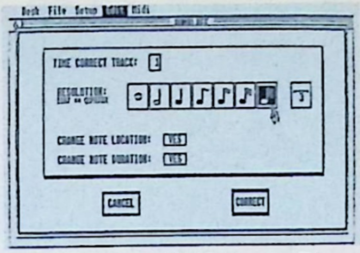

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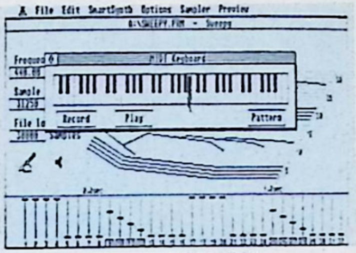

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READER TIPS

• TAME THE MACINTOSH METRONOME CLICK

THE MACINTOSH, WHEN USED WITH Mark of the Unicorn's Performer, generates a metronome click which comes out of the external speaker jack. When you amplify the click over a loudspeaker, you hear lots of hiss and hum. The Mark Of The Unicorn programmers can't make the click any louder because it's now being done in the least time-consuming way. If they reprogrammed the click-making method, it would slow down the sequencer; not a fair trade at all. If you put a noise gate on the output of the Mac, you get rid of all the hum and hiss, and there are many inexpensive noise gates available. But because a noise gate takes a moment to act, the single clicks for all of the ordinary beats are a little reduced in volume. Because the downbeat click is really like four clicks together very fast, the first click of that group opens up the gate and then the second, third, and fourth clicks finally get through really loud. So you end up having a very loud and exaggerated "OOM, pah, pah, pah," which can drive you out of the room. If you put the click through a chorus box (set to its minimum delay), it spreads out each of the individual clicks slightly. It still sounds like a click to the ear, but the chorus makes it last long enough so that the noise gate lets all the clicks through. If you add an equalizer in the signal chain and set the peak of the equalizer to around 1,000Hz, you can get the click to sound almost like a wood block, which is very pleasant-sounding. You might also want to turn off the Macintosh beep on the control panel, because it can drive you crazy; but if the beep goes through this arrangement, it doesn't sound so irritating. This setup (Macintosh into the equalizer, into the chorus, into the noise gate) makes for a very pleasant environment because (1) you no longer have any hiss or hum from the Mac, (2) when you use the chorus, the clicks are all adjustable so you can make the downbeat louder or softer just by varying how much chorus you put in, and (3) by using the equalizer, you make the pitch of the event sound nice and round. These effects can be very inexpensive these days, and you may already have them around, so it's definitely worth experimenting.

—Wendy Carlos, New York, NY

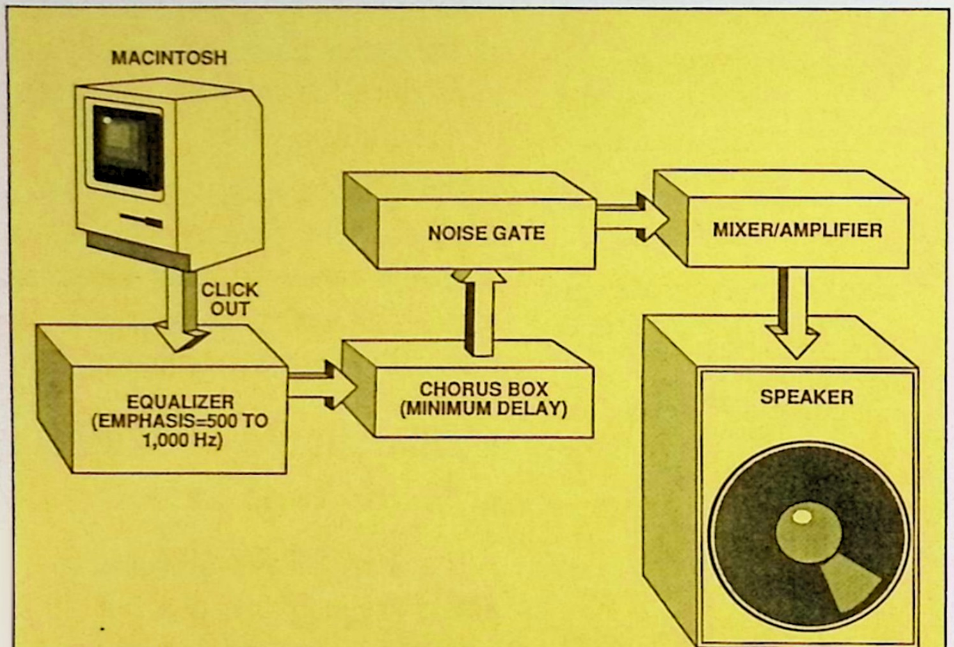
MACINTOSH
CLICK OUT
EQUALIZER (EMPHASIS=500 TO 1,000 Hz)
CHORUS BOX (MINIMUM DELAY)
NOISE GATE
MIXER/AMPLIFIER
SPEAKER

Fig. 1. A signal-routing diagram for taming your Mac's metronome click.

• MIDI DJ SEQUENCER

THERE ARE A COUPLE OF MINOR DRAW—backs in the MIDI DJ software (version 1.00). One of them is that you can't have different time signatures within the same sequence unless you just ignore or "play across" the bar lines. If I want to sequence a tune that has bars of 2/4, 3/4, 5/4, 7/4, etc., I get around this problem by recording the whole sequence in 1/4 time. While this necessitates careful notation of bar numbers on my chord chart, it does allow for quick editing of single beats. Single *notes* can always be edited, of course, but with many more keystrokes. An apparent mistake in the software is that the "delete measure" function deletes one more bar than the number of bars you specify. For example, if you select eight bars for deletion, nine bars will be deleted. To delete just one bar, you have to first insert one bar, *then* select and execute "delete one."

—Doug Buchanan, Don Mills, Ontario, Canada

• ORGANIZING YOUR SEQUENCER TRACKS

YOU'LL FIND IT EASIER TO WORK ON NEW sequencer material if you separate individual takes by a number of blank tracks. In other words, dedicate tracks 1, 5, 9, 13, and so on, to bass, percussion, chords, lead lines, etc. Use the in-between tracks for specific editing, such as experimenting with quantization and for overdubbing purposes. When you're satisfied with material on the in-between tracks, you can merge them onto the other tracks and open the in-between tracks for new overdubs.

—J. D. Johnson, San Jose, CA

• TAPE SPEED DRUM MACHINE EFFECTS

SO YOUR OLD DRUM MACHINE SOUNDS cheesy by today's standards, but you've got no other choice? If your tape machine allows switchable or variable recording speeds, you'll find that the sonic output of your drum machine can be altered. Program your drum pattern at double the intended speed and record it at double the intended speed. When you slow the tape down to normal speed, the pattern will be in tempo, but the drums will be an octave deeper and twice as long. Add a little treble and your drum machine won't sound half bad. On four-track cassette recorders without switchable 1⅞-3¾ ips recording speeds, the difference between the highest and lowest settings of the variable speed control knob may be as much as one octave. If it's less, you should still be able to find a tempo ratio that will work. For example, if the tape pitch-shifts by a maximum of a perfect fifth (a ratio of 3:2), record the drums 50% fast (such as at 180 bpm for a song at 120 bpm).

—Jeff Jetton, Boston, MA

• KORG DW-8000 CPU CHIP UPDATE

THE KORG DW-8000 HAS BEEN SHIPPED with a variety of CPU chips, ranging from #07 to (so far) #12. If you have an older DW, you may find that your instrument will benefit by replacing its old chip with the latest update, obtainable from Korg or your music dealer. For example, in order to be able to share programs with the Korg MEX-8000 rack-mount synthesizer module, you must have update #10 (or higher) installed. Update #12 will make MIDI operation more reliable with sequencers and Yamaha modules. The following simple procedure will enable you to find out which chip you have: Hold the #1 and #2 number keys (also marked SAVE and LOAD), then turn on the keyboard. The number of the currently installed chip will appear briefly in the far right (green) data display.

—Reuben D. Ferguson, Delray Beach, FL

LONG AWAITED RELEAS
BEETHOVEN OR BUST
TELARC DIGITAL
DON DORSEY
BEETHOVEN OR BUST
Breakthrough Beethoven. From the people who brought you BACHBUSTERS.

PATCHES

OBERHEIM MATRIX-6, CASIO CZ-101, & SEQUENTIAL SIX-TRAK

THIS MONTH'S BLAST FROM THE PAST patch is for Sequential's not-so-ancient Six-Trak. Sent to us by David Nichols of Gary, Indiana, it was designed to emulate a Rhodes electric piano. The Rhodes sound can easily be turned into an organ sound by inverting the filter envelope and reducing its amount to 5. Using unison mode will fatten it up quite nicely. The CZ-101 patch comes to us from Jason Levine, of West Orange, New Jersey, who states that his Oriental-sounding plucked timbre sounds best in the upper range of the keyboard. Our last patch, from Shawn Gordon of Anaheim, California, should satisfy those Matrix-6 owners who love bottle flute sounds. Taking on the same characteristics as many sampled bottle flutes, it even sounds as though it pitch-shifts as you play up and down the keyboard.

If you've got a patch that you'd like to see in *Keyboard*, send the diagrammed parameters to Patch Of The Month, 20085 Stevens Creek Blvd., Cupertino, CA 95014. All submissions must be entirely your own creation, and must not be offered for sale commercially. We will pay $50 for each patch we publish. ■

MATRIX - 6R | **BREATH**

	0	1	2	3	4	5	6	7	8	9
00 DCO 1	FREQ 27	FR/LF1 0	SYNC 0	PW 0	PW/LF2 0	WAVE 53	WSEL OFF	LEVERS BOTH	KYBD KEY	CLICK OFF
10 DCO 2	FREQ 12	FR/LF1 +30	DETUNE 0	PW 0	PW/LF2 0	WAVE 63	WSEL WAVE	LEVERS BOTH	KYBD KEY	CLICK OFF
20 VCF/VCA	MIX 0	FREQ 60	FR/E1 0	FR/PRS 0	RES 62	LEVERS OFF	KYBD KEY	VA1 45	VA/VI 0	VA/E2 +63
30 FM/TRCK	FM 21	FM/E3 0	FM/PRS 0	TRCKIN KEYB	TRACK 1 63	TRACK 2 12	TRACK 3 2	TRACK 4 2	TRACK 5 2	
40 RMP/PRT	R1 SPD 0	TRIG STRIG	R2 SPD 0	TRIG STRIG	PORT 0	SPD/VI 0	MODE LINEAR	LEGATO OFF	KY MD UNI	
50 ENV 1	DELAY 0	ATTACK 0	DECAY 31	SUSTN 0	REL 10	AMP 0	AMP/VI +63	TRIG STRIG	MODE NORM	LF1 TRIG NORM
60 ENV 2	DELAY 0	ATTACK 28	DECAY 18	SUSTN 50	REL 30	AMP 40	AMP/VI +63	TRIG STRIG	MODE NORM	LF1 TRIG NORM
70 ENV 3	DELAY 0	ATTACK 0	DECAY 20	SUSTN 0	REL 20	AMP 40	AMP/VI +63	TRIG STRIG	MODE NORM	LF1 TRIG NORM
80 LFO 1	SPEED 40	SP/PRS 0	WAVE TRI	RETRIG 0	AMP 0	AP/R1 +63	TRIG OFF	LAG OFF	SMPL KEYB	
90 LFO 2	SPEED 30	SP/PRS 0	WAVE TRI	RETRIG 0	AMP 0	AP/R1 +63	TRIG OFF	LAG OFF	SMPL KEYB	

MATRIX MODULATION

	SOURCE	AMT	DESTINATION
0			
1			
2	TRAK	-30	VCF FQ

SEQUENTIAL SIX-TRAK

RHODEY TRAX

PARAMETERS		VALUE
OSCILATOR		
00	COARSE FREQUENCY	24
01	FINE FREQUENCY	0
02	GLIDE RATE	0
03	LFO	0
04	ENVELOPE AMOUNT	0
05	INVERT	0
06	ATTACK	0
07	DECAY	0
08	SUSTAIN	0
09	RELEASE	0
10	SAWTOOTH WAVE	1
11	TRIANGLE WAVE	1
12	PULSE WAVE	1
13	PULSE WIDTH	36
14	LFO	1
LFO		
15	FREQUENCY	7
16	PROGRAMMED AMOUNT	0
17	TRI/SQUARE WAVE	0
FILTER		
18	OSC/NOISE MIX	0
19	CUTOFF FREQUENCY	69
20	RESONANCE	42
21	ENVELOPE AMOUNT	15
22	INVERT	1
23	ATTACK	0
24	DECAY	0
25	SUSTAIN	4
26	RELEASE	0
27	LFO	0
28	KEYBOARD	2
29	OSC TRI MOD AMOUNT	33
AMPLIFIER		
30	ATTACK	0
31	DECAY	3
32	SUSTAIN	9
33	RELEASE	11
34	VOICE VOLUME	15
35	UNISON	0

CASIO CZ-101 | **MANDARIN CHINESE**

LINE SELECT	MODULATION		DETUNE				VIBRATO				OCTAVE	
	RING	NOISE	+/-	OCTAVE	NOTE	FINE	WAVE	DELAY	RATE	DEPTH	+/-	RANGE
1+2'	ON	OFF	+	1	07	06	1	33	53	23	+	1

DCO 1 1

WAVE FORM	
FIRST	SECOND
4	2

ENV (PITCH)								
STEP	1	2	3	4	5	6	7	8
RATE	94	93						
LEVEL	99	00						
SUS/END		END						

DCW 1

KEY FOLLOW
7

ENV (WAVE)								
STEP	1	2	3	4	5	6	7	8
RATE	96	59						
LEVEL	99	00						
SUS/END		END						

DCA 1

KEY FOLLOW
0

ENV (AMP)								
STEP	1	2	3	4	5	6	7	8
RATE	99	43						
LEVEL	99	00						
SUS/END		END						

DCO 2 2

WAVE FORM	
FIRST	SECOND
5	0

ENV (PITCH)								
STEP	1	2	3	4	5	6	7	8
RATE	00							
LEVEL	00							
SUS/END	END							

DCW 2

KEY FOLLOW
0

ENV (WAVE)								
STEP	1	2	3	4	5	6	7	8
RATE	99							
LEVEL	00							
SUS/END	END							

DCA 2

KEY FOLLOW
0

ENV (AMP)								
STEP	1	2	3	4	5	6	7	8
RATE	99	55	31	31				
LEVEL	99	89	65	00				
SUS/END			SUS	END				

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OUTPUT
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IN REVIEW

RECORDS

thomas dolby
aliens ate my buick

There are great songwriters, great keyboard players, great arrangers . . . and there is Thomas Dolby, who once again, on *Aliens Ate My Buick*, saves time and money by playing all three roles at once. Never a flashy soloist, Dolby concentrates on finding the sounds and voicings that work best for his songs. Apparently his range of choices is nearly limitless. To cite but one example, "Hot Sauce" takes surf guitar twang, jazz piano fills, Stevie Wonder staccato horn hits, sampled pneumatic drills, Latin dance, and velvety synthesizer evocations of lounge sleaze, and weaves it all into a single fabric around a punchy dance beat.

Dolby prefers the compositional approach to that of the vir- oso, using his keyboards for kotic orchestration, sly musical kes, rich harmonies (especially eely Dan-like chords on the dreamy finale, "Budapest By Blimp"), surprise bursts of dissonance, and solid grooves. Duke Ellington tried this formula fifty years ago; *Aliens* proves that it works for the most gifted artists of the techno '80s as well. Manhattan (dist. by Capitol/EMI), E1-48075. —*BD*

NEIL
LARSEN

neil larsen
through any window

Although session insiders have known about Neil Larsen for more than a decade, this new LP demonstrates that the journeyman keyboardist is one of the most underrated players in the business. Backed by a band of studio heavyweights, Larsen delivers nine instrumentals, each one tight, slick, and spicy.

Despite an abundance of hand-me-down fusion devices, the album draws most deeply from the well of rock—especially the pre-techno vintage. A human drummer provides the pulse, and Larsen lays down some fiery yet meticulous real-time solos, on organ as well as synths. He even covers "Hip Hug-Her," with as much sauce and sass as Booker T's original version. *Through Any Window* is commercial, and some of it teeters toward the Muzak precipice. But it sure is nice to hear someone with chops and taste tear it up on the keys again. MCA, 42018. —*BD*

FACT 22
BLACK
FACT 22
THE TREMBLING WAY
CATHODE RAYMONDE

fact 22

What is it about Ohio anyway? The state that gave us Pere Ubu, Devo, and a rash of bizarre outfits now offers perhaps the strangest Buckeye band of all. The key man in Fact 22 is James Towning, who handles all the keyboard, sequencer, and drum machine parts. On *Twentytwo*, Towning works solo, but he gets to accompany Dave Butler's grim groaning vocals on *Charm*.

Their recording facilities are modest—*Twentytwo* was cut "in the closet," and *Charm* "in the attic." In addition to these two full-length cassettes, Fact 22 sent us an EP remix of highlights from *Charm*, and their newest effort, a short tape featuring two titles, "The Trembling Way" and "Cathode Raymonde." Each features a lively mixture of humor, horror, and musical ingenuity. Towning's rhythm programs somehow plod and swing simultaneously. His melody lines often clutch doggedly on one or two notes, yet they prove more catchy than sophomoric. He writes morose lyrics about heart attacks and death, dresses them up in nightmarish sampled and synthesized colors, and manages to make it all sound upbeat.

Echoes of various influences animate the music—a hint of "I Am The Walrus" on "Cathode Raymonde," an excellent cover of Lou Reed's "Walk On The Wild Side" on *Charm*. So what if it's low budget? That's part of the power of this music. Fact 22 proves that in the home recording age, creativity is no longer strictly the province of the rich. Black Music, 1230 Bryden Rd., Columbus, OH 43205. (If sending an inquiry, include SASE.) —*BD*

neil b. rolnick
a la mode

Among the brighter lights on the horizons of contemporary music is Neil B. Rolnick, whose two pieces on this album offer ample evidence of his talent and integrity. *A La Mode*, recorded with Philadelphia's dynamic Relache ensemble supplemented by Rolnick on synthesizers, follows a modular design, emphasizing cyclic repetitions, complex rhythms, and a kaleidoscopic flow of timbres. You can't write a contemporary piece without some sort of orgasmic free-for-all climax, but Rolnick has the ingenuity to place his about two-thirds of the way through, leaving room for an energetic contrapuntal flourish at the end. John Dulik's piano and—especially—Guy Klucevsek's accordion work textural wonders in the appropriate places.

More conservative structurally is the second piece, *Real Time*, on which Rolnick plays Synclavier II with the Hartt Contemporary Players. Voice samples melt into acoustic string lines, electronic drums echo actual percussion patterns, and solo Synclavier passages segue gracefully into non-electronic interludes. Though *Real Time*, with its references to jazz syncopation and harmonies, is the more accessible of the two pieces, even listeners with conservative taste will appreciate Rolnick's craftsmanship, and particularly his decision to make non-gimmicky, ultimately musical use of his gear. CRI (170 W. 74th St., New York, NY 10023), DS-540 —*BD*

Ditto, *In Human Terms* (Ditto Records, Box 49124, Austin, TX 78765). Slow-moving, darkly colored, thoroughly delightful electronic instrumentals. If Erik Satie had some MIDI gear, he might sound like this. Charles Ditto keeps his textures both transparent and unpredictable, throwing in beautiful synthesized timbres in unlikely spots. He does some mean pitch-bending too: Check out the long sighs in "Urban" and the drunken lament melody in "Slave Waltz." Highly recommended. —*JA*

The Hidden Passage
Tom Howard Ensemble

Tom Howard Ensemble, *The Hidden Passage* (Maranatha!, dist. by Word). A nice instrumental combination for fusiony new age—real wind soloists, percussion but no trap drums, and a string septet, plus Howard on piano and keyboards. Mostly he does the opening arpeggios and pumps out eighth-note accompaniment patterns in the background, but his compositions and arrangements are quite effective, building to slow, impassioned climaxes and then subsiding into intimate murmurs. *The Hidden Passage* is superb stuff, on its own terms. The question is, can I get clear to the end of the review without giving in to this awful compulsion to make some back-handed comment about how sanitized and wimpy it all sounds? Nope, guess not. —*JA*

Don Dorsey, *Beethoven Or Bust* (Telarc, 23307 Commerce Park Rd., Cleveland, OH 44122). A dismal failure of taste from start to finish, a nonstop farrago of electronic kitsch. The tone colors are crisp and sparkling, true, but the orchestrations are dreadfully unimaginative, and the choice of repertoire is an invitation to triviality—"Für Elise," of course, and the *Moonlight Sonata*, and some Bagatelles and Ecossaises, all capped off with something called "Ode To Ludwig," which is described in the liner notes as "based on the 'Ode To Joy' from *Symphony No. 9*" but which contains not a scrap of the famous melody. This is the kind of stuff that gives synthesizers a bad name. —*JA*

Azuma, *Azuma* (Private Music,

IN REVIEW

220 East 23rd St., New York, NY 10010). At times, Azuma's music is poetry about light, segueing from pastel shimmers to sunsplashes to early-evening shadows. Mood is all-encompassing in these pieces; it overshadows the often bland melodies and dully repetitive sequences that become prominent on the livelier cuts. Harmonically, Azuma sticks to the tried-and-true of the Occident—minor triads, major seventh chords—and the electronic timbres found in these Japanese tone poems have been used by *gaijin* around the globe. But as Azuma himself points out, it's spirit, rather than matter, that he takes from the Orient. His debut for a U.S. label is sure to captivate fans of Eastern new age. —*KK*

Sting, *Nothing Like The Sun* (A&M). Sting moves in and out of musical styles on his second solo LP with the mastery of Lily Tomlin changing characters onstage. Kenny Kirkland, best known as a jazz keyboardist before his collaborations with Sting, is indispensible in defining the changes of scenery. From polyrhythmic piano doodlings to funk organ fills to New Orleans blues licks, Kirkland's handiwork is everywhere; in his synthesizer playing, his genius for texture helps shape the lyricism that pervades the album. Backing Sting are numerous other jazz and rock luminaries, including Gil Evans and his orchestra on a unique cover of Hendrix' "Little Wing." —*KK*

Metamora, *Morning Walk* (Windham Hill). Vaguely Irish folk/new age instrumentals, handled with a light and wistful touch. The hammer dulcimer, whistle, and fiddle are firmly anchored by piano, which sometimes steps to center stage for some reflective strumming. Synthesizer backing tracks are effectively deployed on several tracks for atmosphere. Grey Larsen and Pete Sutherland double on keys when they're not busy tootling and picking, and producer Philip Aaberg lends a hand as well. —*JA*

Clyde Criner, *Behind The Sun* (RCA). Though the changes on this glossy funk instrumental LP are pretty standard for the genre, Criner plays solid lead lines and concocts pleasant synth and sample orchestrations. Not much inspiration, but lots of solid keyboard craftsmanship. —*BD*

Skinny Puppy, *Cleanse Fold & Manipulate* (Capitol). This puppy chews holes in the carpet. Cevin Key and D. Rudolph Goettel share credit for synthesizers, sequencers, and sampling in an aggressive set whose unyielding dance beat is welded together out of metallic scraps of disturbing noise. Extraordinary sonic variety infused with apocalyptic vision. —*JA*

HAROLD MABERN
JOY SPRING
SACKVILLE 2016

Harold Mabern, *Joy Spring* (Sackville, Box 87, Station J, Toronto, Ontario M4J 4X8). Intimate jazz/supper club piano, recorded live. Mabern's performance offers a textbook lesson on how to play expressively in a restaurant setting, neither disrupting the ambience nor sacrificing musical substance. —*BD*

Toto, *The Seventh One* (Columbia). Steve Porcaro is out of the band, but he was on the session for this comeback LP, giving us another chance to hear one of rock's hottest keyboard duos in action. Aside from Porcaro's departure, it's business as usual: big neo-Emerson synth textures, intelligently arranged and impeccably executed. —*BD*

Mark Styles, *Solestas* (Periodic Music, 271 Madison Ave., Suite 908, New York, NY 10016). Four long, aimless pieces, the raw material for which was generated by Dr. T's Algorithmic Composer software. No chord progressions, not even any audible bar lines, just a slow eighth-note pulse doodling along in a vaguely Oriental diatonic mode, with the usual variety of synths and samplers playing sustained string notes and various plucked and percussive timbres. Styles has produced the ultimate new age background CD: If you listen to any given ten-second slice, the music sounds not only beautiful but profound; only gradually does it become clear that there is no content whatever, other than the monotonous placid message of the texture itself. Perfect for a soundtrack to accompany a film (preferably computer-generated with fractals) of an alien planetary surface on which there is no life, only endless expanses of rock and water. It's great that computers allow us to explore this kind of compositional horizon, but we can't help thinking that Styles has painted himself into a black hole. The style collapses in on itself, leaving nothing—or at least, nothing of any interest—visible to the outsider. —*JA*

Conveniens, *Clear* (Convenience, Box 66461, AMF O'Hare, IL 60666). Primitive, naive avant-rock instrumentals for synthesizers and drums. Drummer John Maz plays miscellaneous grooves and fills while Sterling Smith fills in the texture with drones and stabs. Guest soloists and improvisatory episodes lend a jazzy flavor. What saves the effort, if anything does, is the lack of pretension and the lack of robotic repetition. If you buy this album not expecting anything in particular, it might grow on you. Then again, it might not. —*JA*

Eurythmics, *Savage* (RCA). Are Eurythmics turning into the punk version of Captain & Tennille? In spite of the histrionics, the innuendos, and the crackling drum machines, this album really failed to move me. David A. Stewart (as he styles himself in the liner notes) produced, and presumably plays all the keys and guitars. He comes up with some fresh bits, like the odd clicking that opens "Wide Eyed Girl," but after four bars it's off to Monster Backbeat Land; the exotic possibilities are smothered rather than being developed. —*JA*

Hiroshima, *Go* (Epic). Mellow electronic orientalia, produced by George Duke and chock-a-block with synthesizer textures. The delicate orchestration nicely sets off several quietly impressive keyboard solos by Dan Kuramoto, who also handles shakuhachi, sax, and computers with equal deftness. —*BD*

VIDEOS

chick corea
keyboard workshop

This 60-minute video is billed as a lesson on practice, improvisation, and composition methods. It's actually something more insightful—a glimpse into Corea's working processes. For him, the spirit of making music is infinitely more important than the surface, simply because, as he shows, technical details almost take care of themselves when one has the right mental approach. Using his own tunes to demonstrate this concept, he shares his visualization techniques for eliminating "glitches" and playing fast single-note lines.

CHICK COREA
DCI
MUSIC VIDEO INC.
Keyboard Workshop
Methods of Composition, Improvisation and Practice
Booklet included
60 Minutes

Corea is not a "how-to" teacher; those looking for explicit instruction should find other sources. And since he teaches more by showing himself at work than by using the contrived lecture-demonstration format, viewers are left to draw their own conclusions. But as his discussion shifts from classical to jazz to the blues to composition to trio playing, his offhand remarks are food for thought: Think of the blues, he advises, as being "melodic, like you could put words to it all the time."

What's illuminating about this video is that it shows a mythic jazz artist as a human pianist—between the frequent mistakes he makes while running through phrases at the keyboard, he offers such down-to-earth advice as setting achievable goals each time you practice. What's inspiring is his eternally optimistic approach toward his craft. "Go out and win," he urges. "What else is there to do, anyway?"

DCI Music Video (541 Ave. of the Americas, New York, NY 10011). —*KK*

WORLDVIEW

SOVIET UNION

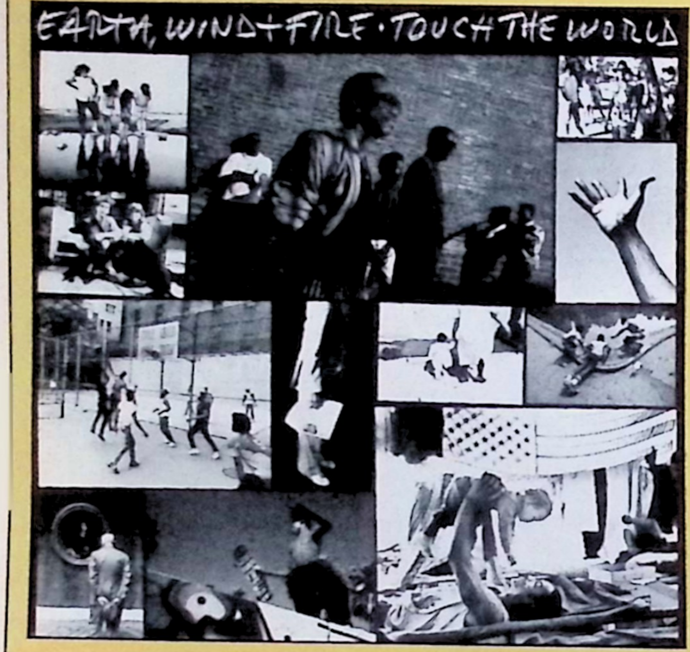
The Moscow-based youth newspaper *Moskovsky Komsomolets* has announced the results of its annual music poll, which include the fans' choice for top Soviet keyboardist of 1987. At the head of the list is **Alexander Zaitsev** of Time Machine, followed by **Sergey Kuryokhin** of Popular Mechanics and **Leonid Makarevich** of Autograph. Composer/keyboardist **Igor Nikolayev** finished in fourth place, and **Kris Kelmi** in fifth.

Although the Soviet Union is not known as a major manufacturer of electronic keyboards, Gorbachev's liberalization policies are beginning to stimulate this industry. Several new keyboards in the Yunost line have recently been produced, including the Yunost 1122 synthesizer, the Yunost 21 string synth, and the Yunost 1132 organ. Yunost was the first Soviet firm to produce electronic organs.

Western musicians are performing more frequently than ever before Soviet audiences. During the Moscow Panorama festival, Uriah Heep appeared in Moscow, and Wishbone Ash in Leningrad. In 1988, Deep Purple will make its first appearance in the USSR, and **Elton John** is scheduled for a return visit. Negotiations are also underway between the Soviet Melodiya label and **Paul McCartney** for release of a 12-song LP recorded by the former Beatle specifically for Soviet audiences.

—Vladimir Pervukhin
Novosti Press

The Soviet record label Melodiya has been releasing some



EARTH, WIND & FIRE
USING SYNTHS TO *TOUCH THE WORLD*

WHAT'S THE KEY TO A band's longevity? The answer seems to have grown a little more elusive in this decade, with MTV's ability to push less-than-legendary acts to star status. Ultimately, though, groups who don't have it—the sound, the groove, whatever you like to call it—slip out of the spotlight. Those who remain seem to have a mysterious instinct for preserving their musical identity while adapting to, or perhaps setting, each new fashion.

After a four-year break, Earth, Wind & Fire returned last November with *Touch The World*—a gold (so far) addition to a 12-record discography that contains only gold, platinum, and double platinum—and are now wrapping up the U.S. leg of a worldwide tour. *Touch The World* [Columbia, FC 40596] is a paragon of technology wedded to musicality; high-end programming was as integral to its production as EW&F's trademark vocals and horn section. Founded by vocalist Maurice White in 1971, EW&F began as a group of streetwise Chicago teens. Who would have foreseen them making an album for which they'd hire 13 keyboardists? In the late '70s, as EW&F abandoned their esoteric soul-jazz blend for a more streamlined, accessible sound, critics noted something surprising: Despite their growing audience, the essence of the group—a gospel-based spirituality—only got stronger. Today, with their technological makeover, EW&F seems to have come still closer to sharing their vision.

About a year in the making, *Touch The World* spent the last few weeks at "Rhett's Place," as the home studio of Rhett Lawrence is known by many L.A. musicians. For six of the LP's ten cuts, Lawrence worked there with the various songwriters and arrangers, programming sounds, laying down synth and drum tracks, and doing keyboard overdubs—all under the loose guidance of Maurice White, who produced most of the LP. For the dance tunes, Rhett transferred the songwriters' sequenced versions into a Fairlight Series III, on which the final versions were created. The ballads, on the other hand, were cut with a live band on tape, which was then brought to Rhett's Place for electronic overdubs.

On the ballads, this combination of a human feel with sophisticated technology posed a few problems. Since they were cut without a click, Lawrence first had to create one from the drum kit. Then, although he wanted to add some digital delay lines to the percussion track, the rubato tempo precluded the use of a delay unit. His solution was to create the effect manually. First he duplicated the sounds, so they could be bounced from left to right speaker. Then, to imitate delay, he entered each successive note into his sequencer at a lower dynamic level. Now when the sequence was locked up to his makeshift click track, the "delays" followed the rubato.

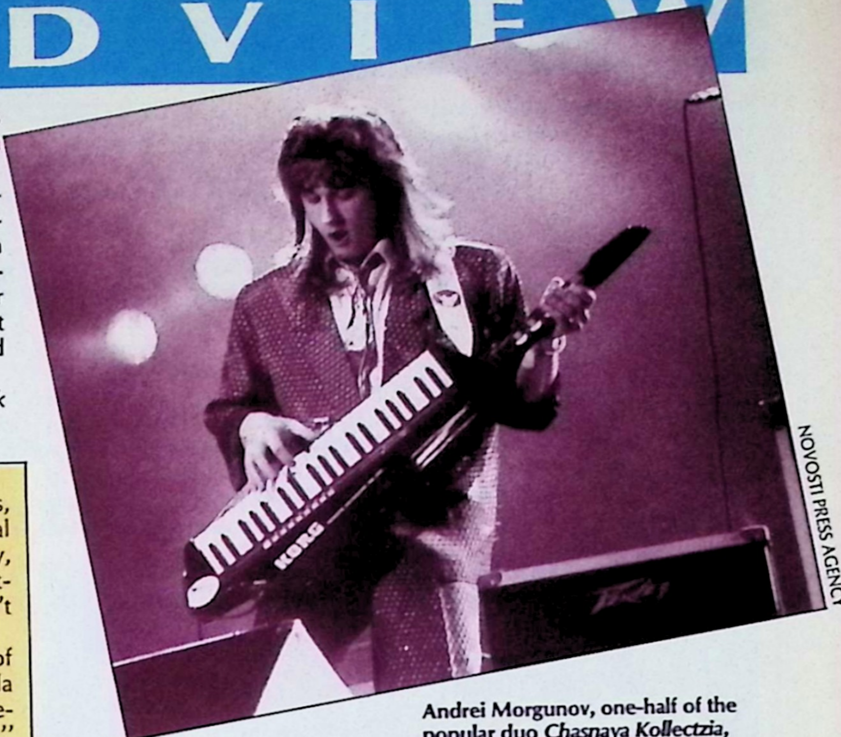
For his intro to the ballad "Touch The World," Lawrence decided not to bother creating a click track. He also didn't want to use conventional patches for it—a free-form tempo, he figured, should be filled with exotic sounds. So he worked backwards. With the tape reel placed upside-down, he sequenced a two-bar pattern into a Linn 9000, using the tempo knob to produce a whirlwind accelerando. (Since the tape was running backwards, he actually had to create a ritard.) Beneath the synth pattern he added a layer of piano. "We put long echoes on the piano part and printed that backwards, so it would sound like a long string swell going into the tune." The result was just what EW&F was after—a modern edge to a pretty ballad.

When Maurice called Wayne Vaughn last summer and asked him to record "Thinking Of You," Vaughn already had a near-complete version stored in his computer. All that was left to do at Rhett's Place, he says, was "put the icing on"—add horn and drum tracks, and beef up some of the sounds. "When you're writing a tune," Vaughn says, "*that's* the best time to produce it. If I had written this without sequencing it, and then had come back to it, I could guarantee you those parts would not have been there." There was a part, though, that came a little later. "We got to the studio one night and worked on the C section, which had a totally different vocal line. That day in the shower, I said, 'Man, we have to change that.' And when the hot water went off and I turned on all cold, that lick came up."

Like many of the group's earlier albums, *Touch The World* contains an instrumental interlude. But instead of serving to bridge thematic material, "New Horizons" is more concerned with time travel, carrying the listener from the group's golden years in the late '70s to the present and beyond. Written, produced, and arranged by Bill Meyers, "New Horizons" opens with a montage of EW&F hits—from "Shining Star" to "Magnetic"—that was sampled into and as-interesting albums in recent months. Of particular interest to *Keyboard* readers is *Puls-1*, the label's first computer music album, of which one million copies were produced. The performers, **Andrey Rodionov** and **Boris Tikhomirov**, are already at work on a follow-up LP. Jazz fans might want to check out *In the Rhythm Of Swing* [Melodiya, C 60 23709 006], by the Oleg Lundstrem big band, a Soviet institution since 1934. One highlight of this LP is the piano work of **Mikhail Okun** on "Embraceable You."

Film producer Andrey Mikhalkov-Konichalovsky will collaborate with a group of American filmmakers in a biography of **Sergey Rachmaninoff**, scheduled for filming this summer in the Soviet Union, France, Switzerland, and the U.S.

—Peter Machajdik



NOVOSTI PRESS AGENCY

Andrei Morgunov, one-half of the popular duo *Chasnaya Kollectzia*, steals the spotlight at last year's Rock Panorama Festival in Moscow.

POLAND

Wladyslaw Komendarek, formerly with the popular Polish art-rock band Exodus, has recorded a solo album called *Dotyk chmur*, or *Touch Of Clouds* [Pronit, dist. by Ars Polana (Krakowskie Przedmiescie 7, 00-068 Warsaw, Poland 18-69-31)]. . . . Two albums by the rock group Kombi—*Kings Of Life* and *Kombi 4*—recently went gold. **Slawomir Losowski**, leader and keyboardist of the band, is also known as a maker of fine keyboards. . . . American pianist **Neal Larrabee** went to Poland last year to record *Piano Recital* [Polskie Nagrania (ul.Dluga 5, Warsaw 00-263, Poland 31-16-17)], which features a program of Beethoven and other heavyweights, along with several obscure composers. The recipient, in 1976, of the first Arthur Rubinstein gold prize, Larrabee currently teaches piano at the University of Connecticut.

—Wojciech Kubiak

GREAT BRITAIN

Brian Eno has been pursuing his longtime interest in video art. Recent works include the female nude study *Thursday Afternoon* and a 47-minute portrait of the New York skyline, titled *Mistaken Memories Of Medieval Manhattan*. He is also planning to open so-called Quiet Clubs, or video art galleries with atmospheric lighting and appropriate music.

Composer and pianist **Michael Nyman** made a rare, yet very welcome, tour of England and Wales with his band in January. In addition to Nyman's piano, the band's instrumentation included tuba, bass trombone, saxophones, piccolo, violins, electric bass, and **Catherine Edwards** on E-mu Emulator. The retrospective set included the gorgeously lyrical "Song Without Voice," "Chasing Sheep Is Best Left To Shepherds," assorted film score selections, and "Water Dances." Nyman is perhaps best known for his soundtrack work for such films as *The Draughtman's Contract* and *A Zed And Two Naughts*, as well as commercial music for British Rail and the town of Milton Keynes.

—Ken Hunt

CZECHOSLOVAKIA

Czech fans of Omnibus are looking forward to the summer release of the Prague-based group's new album and video. Synthesizer textures play a major role in the sound of Omnibus. The two keyboardists, **Jaroslav Zajpt** on Yamaha QX21 and Korg Poly-800, and **Vladimir Tiplica** on Roland Juno-1 and SH-1, effec-

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sembled on a Fairlight. Once he completed the montage, Meyers worked on finding the right sampling source for the noise sweep he wanted beneath it.

"Everybody brought in different equipment, and we auditioned it," says Daniel DeSouza, product specialist at Fairlight, who helped Bill with the programming. "This guy was doing carpentry in the studio—we were like, 'Hey! Could we borrow your stuff?'" In the end, it was a vacuum cleaner that won the most votes; after sampling it upright and in action, they chose the former. "We recorded the drone using the Fairlight's sequencer, and then added pitch-bend and flanging to create a chorused version. Then we pitch-bent the whole thing up, so it would gradually rise in pitch." As the vacuum sample reaches a climax, all the sound explodes, proclaiming a new era. To represent EW&F as they are today, Meyers sequenced a complex kalimba-based synth texture, over which a sax improvisation was played live.

An instrumental combination like that would get a thumbs-up from Wayne Vaughn. "Adding live instruments to sequenced instruments gives the sense of a live performance. Like the live guitar in 'Thinking Of You'—it added that little attitude. Each live texture adds a familiar sound that gives one a perception of, 'Hey, yeah, okay, that's live trumpet, so that must be live bass!'" (Incidentally, "Thinking" is one of the few cuts that does not use real horns; Rhett concocted his own by melding analog synth sounds with horn samples, and adding reverb. The bass is also electronic; Wayne sequenced it using Texture software.) Conversely, for the *oohs* and *aahs* in the song, he opted for Fairlight voices rather than human ones, to evoke a celestial quality. "Real voices would've been too heavy, and the control you get from putting it on a keyboard wouldn't have been there."

Philip Bailey, the other half of the EW&F front line, asked Attala Zane Giles to do a cut. "I immediately went to their old stuff," Zane says, "and analyzed what made them successful then." Deciding it was their intros and endings, he set about creating a captivating opening for his tune. The result is a melange of vocal and percussive textures caught in a gradual but dramatic synthesizer swell—an effect he got with the Roland D-50's "Digital Native Dance" factory patch. Yet as detailed as he intended the intro to be, the mix revealed an unexpected bonus. "When Philip heard it," Zane says, laughing, "he was like, 'Man, that sounds like "evil Roy"!' It was actually a keyboard part that sounded like envelope filters turning over; it kind of *said* 'evil Roy'—you know. Philip said, 'We should name this "Evil Roy"!' I said, 'Wait a minute, man. I ain't writing no demon stuff.'"

But "Evil Roy" remained, evolving into an inspirational song for street kids rather than a Satanic work. The groove of the tune gets its intrigue partly from the ways in which Zane and Rhett disrupt it. Just before the first chorus, for instance, they threw in a conglomerate of Akai and Fairlight samples for a second, producing a nasty-sounding *errr*. "You have to have little parts or sounds like that," Zane says, "to give your music a different flavor. Because nowadays when you listen to the radio, you hear interesting stuff all the time. You've got to extend yourself—come up with something different."

—KK

tively blend their timbres with those of Pavel Zvolensky's Wersi CX5 electronic drums, Lubos Lauterbach's bass, and Ota Mandelik's guitar.

The New Prague Trio, with pianist **Arnost Strizek**, violinist Jiri Klika, and cellist Jan Zvolanek, has released a new album on Supraphon (1111 4107 G), featuring Lalo's *Trio In A* and Chopin's *Trio In G Minor*, Op. 8. Founded in 1970, the trio has won international renown in the '80s, touring the U.S. and Japan in 1986.

A pioneering band in Czechoslovakian rock, M.Efekt, is making a comeback. The Prague-based group will release its eleventh album this year, with a recent addition, **Lubos Manda**, on Roland D-50, Yamaha FB-01, and other keyboards.

The 23rd Bratislava Music Festival included a "Keyboard Session," at which Czech artists presented new works. Among the performers were synthesists **Marian Varga** and **Martin Kratochvil**, jazz pianists **Milan Svoboda, Peter Breiner, Laco Gerhardt, Boris Urbanek**, and **Daniel Fikejz**, and classical pianist **Marian Lapsansky**. At another concert, the Hungarian Ensemble of Percussion Instruments performed music by American composer **Steve Reich**.

—Peter Machajdik

ITALY

This year's International Festival Of Piano Music, held in Brescia and Bergamo, will feature a panorama of twentieth-century American piano, from ragtime through the music of Aaron Copland, Roger Sessions, and Elliott Carter, up to works by William Bolcom, Lukas Foss, and John Adams. Beginning on April 23 and continuing until June 10, the festival will offer performances by American pianists **Alan Feinberg, James Tocco, Jeffrey Swann**, and *Keyboard* columnist **Ursula Oppens**, as well as by the Italian pianists **Marco Fumo** and **Daniele Lombardi**.

—Richard Trythall

CANADA

After a six-year hiatus, rock supergroup Prism has reformed with **Andy Lorimer** on keyboards. A compilation CD with several new cuts is being negotiated by former manager Bruce Allen. . . . Fresh from its success in recording the *Platoon* soundtrack and Bon Jovi's latest LP, **Little Mountain Sound** is continuing to upgrade its studio facility with the delivery of two E-mu Emulator IIIs. . . . New software is available for the Atari ST and Roland's MT-32 multitimbral synthesizer module. The Designer Series MT-32 Editor from **J. Koftinoff Software** includes two new banks of patches, and can be installed as a desktop accessory, operating in the background of most ST sequencers. For further information contact J. Koftinoff Software, Box 1405, Grand Forks, British Columbia V0H 1H0, Canada.

—Marc Jorgenson

UNITED STATES

CAREER UPDATE. Punk Svengali **Malcolm McLaren** has wrapped up his next album, recorded at Unique Studios in New York and scheduled for release on CBS. **Robbie Kilgore** and **Mary Kessler** shared programming and production credits, with **Steve Rimland** handling the programming for the Fairlight Series III. . . . Meanwhile, at Duplex Sound Studios in New York, **Deodato** is finishing his production for the next Pretty Poison LP. . . . The Settlement Music School, long known for its innovative educational programs for underprivileged students, celebrates its 80th anniversary on May 10 with an all-star concert at the Academy of Music in Philadelphia. Partici-

NOTES FROM THE UNDERGROUND

IN MARCH 1913, THE ITALIAN FUTURIST LUIGI Russolo wrote a manifesto in which he championed "the art of noises"—a music that used motors, squealing trams, and muttering crowds. To illustrate his theories, the young artist built a battery of crank-operated boxes that, according to a London *Times* reviewer, produced a racket resembling "sounds heard in the rigging of a channel-steamer during a bad crossing."

In March 1983, Boston art-clangers Mission of Burma disbanded, and Roger Miller, the group's guitarist and co-founder, picked up where Russolo left off. "During that summer," he recalls, "I started to get my next band, Birdsongs of the Mesozoic, going. Well, when Birdsongs wasn't giving me enough to do, I had this idea.

"I bought a Yamaha electric baby grand piano, and I thought, 'Hey, this has strings—I could start doing prepared piano stuff!' If I could find this looping device that I'd heard about—the Electro-Harmonix 16-second digital delay—I could do live what I'd been doing for years in a cheap studio setting.

"So in the summer of '83, when I got the digital delay, I began to go full steam ahead. I'd learned from John Cage that bolts are very useful things, and I'd seen Fred Frith put alligator clips on his guitar strings. Since I often play rock clubs, my whole approach is to keep things moving, shifting preparations from song to song. I lift the front flap so that the dampers are exposed; there's about an inch and a half behind them where I can reach in and insert the stuff."

Among Miller's collection of preparations are wooden splints, ear plugs, and a comb that he jabs into the low strings while playing the mid-range strings with a guitar slide. He also expresses himself through various effects devices—a Boss Super Overdrive distortion pedal, an Electro-Harmonix Big Muff, an Ibanez analog delay pedal, and the ubiquitous 16-second delay.

On his solo LPs *No Man Is Hurting Me* [Ace of Hearts (dist. by Rounder, 1 Camp St., Cambridge, MA 02140), AHS 10002] and *The Big Industry* [Ace of Hearts, AHS 10012], Miller adds samples of everything from lawn mowers to egg beaters, whipping up what he calls "Maximum Electric Piano"—music that would warm Russolo's heart. It's an eclectic blend, comprising Terry Riley-ish minimalism ("Echo Piece"), machine-age clangor ("Groping Hands"), snakey Middle Eastern modes ("No Man Is Hurting Me"), and "just pure noise, where I'm hammering the piano strings with a guitar slide, the sustain pedal down, going through a fuzztone, like in my version of [Jimi] Hendrix' 'Manic Depression' [*The Big Industry*]."

Freed by the September '87 breakup of Birdsongs, Miller, at 35, has taken his one-man gamelan on the road. And despite the stately look of his baby grand, this is one pianist who's holding his own in the rock clubs. "I think I'm bringing out a side of the piano that hasn't been heard much," he chuckles. "Like, you know how the original word for piano is 'pianoforte,' meaning 'soft-loud'? Well, it's been reduced to just soft—'piano.' So I'm bringing out the *forte*."

—Mark Dery

PAUL ROBICHEAU

Noise artist Roger Miller: "I'm bringing out a side of the piano that hasn't been heard much. The original word for piano is 'pianoforte'—I'm bringing out the 'forte.'"

AFTERTOUCH™

OFFICIAL NEWS FROM THE YAMAHA USERS GROUP APRIL, 1988.

Drum machine gives musicians new creative license.

With the announcement of the RX7 Digital Rhythm Programmer, Yamaha has provided musicians with a powerful tool for writing.

The RX7 comes with 100 built-in PCM samples, providing access to a range of drum sounds, from acoustic to electronic. It offers a wide choice of percussion instruments and cymbals (including ¼-open and pedal hi-hat sounds)—as well as an assortment of instrument samples, such as electric guitars, basses, clavinet, marimba and brass.

Individual voices are assignable to any of the RX7's 24 keys, and can be edited for pitch, volume, pan and decay. There's also an effects feature that lets you add up to 3 delayed repeats of the sound, each with its own pitch, level and pan setting. There are 10 "drum kit" preset key assignments that can be called up instantly, including 5 that are user-programmable.

YAMAHA RX7 DIGITAL RHYTHM PROGRAMMER.

The RX7 lets you assign a single voice to be played in pitch over the top row of 12 keys. And it offers 8-note polyphony per voice, so notes that you've played aren't cancelled by successive drum hits. If you connect the RX7 to a MIDI keyboard like the DX7II, volume on each RX7 voice is controllable by key velocity. Voices also respond to pitch bend information from a MIDI controller.

In composing, you can create up to 100 patterns (99 measures in each), 20 songs and 3 chains. You can insert gradual tempo and volume changes into songs, and mark any part of a song for instant location. Plus, you're free to save all your patterns, songs and chains to cassette, RAM4 cartridge or computer.

The RX7 is available now at a suggested USA list price of $895.00 at authorized Yamaha Digital Musical Instrument dealers.

Hot Tips

Using the DX7IIFD to store data from an RX5. The RX5's bulk data dump is larger than the 20K buffer of the DX7IIFD. So it isn't possible to directly download RX5 bulk data onto a disk in the synthesizer. There is, however, a simple alternate method.

Save the memory of the RX5 onto a formatted RAM4 cartridge, then put it into the cartridge slot on the DX. Enter Edit mode on the DX and call up the Disk function via button #16. Select the CRT disk library and save the contents of the RAM4 cartridge to disk—effectively bypassing the DX's internal buffer.

To use your stored data from disk, just put an RX5-formatted RAM4 cartridge in the DX and transfer the file you want from disk to cartridge. Then use that cartridge in the RX5.

Questions

I have a QX1, and I'm using Step Time Entry to type in music that's beyond what I can play live. But how do I get it to sound more like a person and less like a computer?

The most obvious approach is to make alterations in your QX1 Banks after you've entered them in Step Time Record. Use Edit mode to make small changes in the Clock value for some of the notes. Just keep in mind that "human" feel isn't easy to define, and it may take a number of tries to find the approach that works best for you. Whatever you do, make sure you copy your original, unedited tracks. That way, you can always compare. And if you have to, you can create new copies for further experimentation.

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pants will include pianists **Leonid Pennario, Peter Nero, Gary Graffman**, and **Billy Taylor**. Ticket prices range from $10 to $250. Call (215) 336-0400 for further information. . . . Be on the lookout for the **Dave Brubeck** Quartet, which returns from its European tour in late March. Upcoming dates include performances with the Murray Louis Dance Company on April 9 in Lacomb, Illinois, and April 28-30 in Seattle. They'll also be giving concerts in Schaumberg, Illinois, on April 10, Mamaroneck, New York, on April 15, Schenectady, New York, on April 16, and Jacksonville, Florida, on April 22. . . . He first won notice as pianist for Dizzy Gillespie's quintet. Later, he established himself as one of Hollywood's top film and television composers. Now **Lalo Schifrin** takes another step forward with his recent appointment as musical director and permanent conductor of the Paris Philharmonic. . . . **Liz Story** takes her new age piano stylings to Colorado this month, with a performance at the University Center Ballroom in Greeley on April 30. . . . The brilliant Austrian classical pianist **Alfred Brendel** makes a rare California appearance with an all-Schubert concert at Sherwood Auditorium in La Jolla on May 5. . . . A rising star on the jazz piano horizon, **Mulgrew Miller** recently completed a European tour with drummer Tony Williams, followed by a series of Japanese concerts with bassist Reggie Workman and drummer Freddie Waits. . . . **Pete Elman**, keyboard player with Pride And Joy, has finished his upcoming solo album, featuring Lisa Goulder on vocals. . . . **Nina Tichman** completes her Debussy cycle, commemorating the composer's 125th birthday, with a concert at Merkin Hall in New York on April 5.

JACQUES SARRAT

"If I show myself as I am when I play, I don't feel I am living two different lives. That can cause difficulties, because you have the feeling that your audience prefers you to show different things."

MARIA JOAO PIRES:
MOSTLY MOZART FROM PORTUGAL

MARIA JOAO PIRES ONCE WALKED AWAY from things most pianists would sell their souls for—worldwide concert tours, devoted audiences, the opportunity to expand her prize-winning discography. Only six years earlier she had taken first place at the 1970 Beethoven Competition in Brussels, an achievement that had transformed her from a musical phenomenon in her native Portugal to an international artist. The press assumed her absence was due to illness, but the truth is that Pires was simply tired. "I had a small problem with a muscle in my right arm," she says, "which gave me an excuse to stop the concert life. My children were babies then. I was very happy to stop. I even thought, 'Perhaps I'll never play again.'"

In 1981, four years later, Pires realized she "missed the piano," and resumed her career. Today, at 43, she is recognized as one of the finest Mozart interpreters of our time. In concert she is striking in a paradoxical way: Devoid of glamor and possessing the height and build of a child, she plays with a depth that reveals an uncommon inner strength and wisdom. Not surprisingly, the prospect of fame interests her no more this time around than it did the first. "The most important thing is the children. In a secondary way comes my career."

Nevertheless, her career has kept her on the road almost non-stop for the past six months—from Japan to the Soviet Union, and, since January, to Canada and the United States, her first North American tour. While other pianists distinguish themselves by playing obscure or contemporary music, Pires has stuck to the bread and butter of piano literature—Bach, Beethoven, Chopin, Schubert, Schumann, and of course Mozart. It's the size of her hands, she claims, that led her to center her repertoire around Mozart; she can play his entire piano *oeuvre* without strain. "Alicia plays everything," she says, referring to Spanish pianist Alicia de Larrocha, who also has small hands. "But we have different approaches. I just can't play when things aren't very easy and fluent." If Mozart's music is well suited for her hands, it also connects with her character as a performer, which is remarkable more for subtlety than for virtuosity, more for tranquility than for passion. As the *France-Soir* commented following her Paris recital two years ago, she is "a Mozartian in every fiber of her body, and in her soul."

Though her hand size keeps her from playing Brahms, Liszt, and many other composers, Pires dismisses the idea of stretching exercises to widen her span. "I don't like exercises," she says. "I practice only the pieces. And I don't take care of my hands—I do everything with them." "Everything" includes milking cows and feeding pigs on the 250-acre farm that is home to her and her family in Portugal. When her concert schedule takes her to other parts of Europe, she often travels in a 24-foot van so that her husband, a Swiss surgeon, and their two pre-teenage children can accompany her.

Pires concludes her U.S. tour this month, appearing April 7-10 with the Detroit Symphony. She continues to record for the Erato label (dist. by RCA), whose new Bonsai CD collection includes several of her Mozart recordings.

—KK

INDUSTRY UPDATE. If beer and perfume companies can sponsor rock and roll tours, why shouldn't other businesses get involved with classical piano contests? **Pan Am** is the official world airline, and **Little America** the official hotel, for this year's Gina Bachauer International Piano Competition, which takes place in Salt Lake City on June 14-25. Anyone flying Pan Am to the competition will receive a free 100-page official program at Symphony Hall on presentation of a ticket receipt from their flight. And the hotel has donated 20 rooms to jury members, contestants, and selected VIPs; ten rooms will include grand pianos, courtesy of **Baldwin**. . . . When the San Jose, California, school district began a project to develop an innovative music curriculum at San Jose High School in 1985, a number of different enterprises joined hands to help make the program a success. The Packard Foundation contributed a three-year grant, which paid for equipment and personnel. The following year saw the installation of 30 complete MIDI stations throughout the school system, paid for by a grant from **Apple** and further assistance from Packard. In 1987 the program expanded further, with 37 more MIDI stations installed at Lincoln High School and Trace elementary school. Shortly afterward, **Casio** donated 720 PT-82 keyboards to the city's 25 elementary schools to provide additional feeder systems for the district's MIDI programs. Now, with San Jose State University helping out by field-testing MIDI software and developing teacher programs, San Jose students have the means at their fingertips for mastering the musical challenges of tomorrow. For details on the system's curriculum, contact the

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San Jose Unified School District, 1605 Park Ave., San Jose, CA 95126-2196. . . . **JTG Of Nashville** has filed suits against three retailers for failing to discontinue sales of Sesame Street Musical Storybook keyboards, which allegedly utilize keyboard technology copyrighted by JTG for use in its "My Play A Tune" product series. The suit was directed against Montgomery Ward, Toys R Us, and Walden Books because Sight & Sound had ceased production of its Sesame Street keyboards before the patent in question had been awarded to JTG.

ACADEMIC NOTES. On the keyboard, a cluster is a fistful of notes jammed together and played all at once. In academia, it's a panel of experts from different areas of study who join forces in a research project. An interesting cluster of the latter sort is coming together to study how human beings develop their ability to hear and create music. Cosponsored by the Eastman School of Music at the University of Rochester and the university's medical school, the project involves specialists in music education, theory, and composition, pediatrics, psychology, human development, and computers. The panel will present its findings and preside over a symposium on June 27-July 1. If you're interested in the results, contact the Eastman School of Music, University of Rochester, 26 Gibbs St., Rochester, NY 14604. . . . Robert Ceely offers his electronic music workshop at the New England Conservatory on June 20-24. The program includes lecture demonstrations and hands-on work involving a Kurzweil 250, an ARP 2600, a modular Moog synthesizer, a Yamaha DX7, and a variety of Buchla, Roland, and EML gear. To register, write to the Conservatory at 290 Huntington Ave., Boston, MA 02115, or call (617) 262-1120.

MUSIC EXPO '88. More than 200 manufacturers will be exhibiting at Music Expo '88, a consumer show being staged at the Long Beach Convention Center from April 29 through May 1. Product demonstrations, seminars, live performances, and contests are among the featured events being scheduled. For details on how to attend, contact Musex, Inc., 723½ N. La Cienega Blvd., Los Angeles, CA 90069, or call (213) 659-0701.

BULLETIN BOARD. A new group, Network 2000, has been formed for users of the Akai EWV-2000 and EWI/EVI. Technical advisers include Nyle Steiner, EVI's designer; Kevin Kennedy, professional products specialist for IMC; and Andy Muson, owner of the EWI Store. Network 2000 offers a monthly newsletter featuring new patches, programming tips, technical updates, interviews, answers to member questions, and performance applications. Further information is available from Valley Productions, Box 3220, Ashland, OR 97520; the phone number is (503) 488-2492.

Continued

VINCE CLARKE

SYNTH-POP STALWART

ESPECIALLY IN ENGLAND, THE STYLES OF synthesizer-based pop music have evolved so quickly over the past several years that those who stick to their guns are often left in the dust. So taking a look at the accomplishments of Vince Clarke might appear to be a look backwards rather than into the future. Clarke has weathered the rise and fall of several projects. He contributed nine of the 11 tunes on Depeche Mode's debut LP (including the international hit "Just Can't Get Enough"), and did two albums with Alison Moyet (as Yazoo), as well as a couple of singles with the Normal and the Assembly. He has risen from the ashes virtually unscathed, with a reputation for quality writing and musicianship.

Clarke's most recent project, Erasure, seems to be a bit more settled. At least in his mind, it's meant to last. "I think I'm more in a position to handle being in a permanent group now than I was before," Clarke states. "So, I auditioned [vocalist] Andy Bell, called the band Erasure, and decided on a five-year plan—five albums and five world tours. Erasure is not something that was intended to be a project; it's a proper group."

Since their 1986 debut album *Wonderland* [Sire, 25 354], the pair has produced a constant stream of highly danceable pop music that has led them to the top of the British record charts several times. Their second album, *The Circus* [Sire, 25 554], was so well received that the group released remixes of many of the tunes as a two-record set entitled *The Two Ring Circus* [Sire, 25 667].

Now, in a time when sampling practically rules, Clarke derives Erasure's sound in a different way. Still burned from some rather rough experiences with early Fairlights, he now concentrates on developing his sound with non-sampling synths. "Back when I toured with Yaz," he explains, "I took two Fairlights out on the road; while one was playing, the other one was loading up the next song. Back then, the bandwidth was pretty small, so it sounded awful. You had to use the sampled sounds because it couldn't trigger any other synths. On top of that, it took us two months to program the sounds. As it turned out, it was a real problem." So, he keeps his arsenal simple: Yamaha RX11, Roland TR-727 and TR-505, Oberheim Xpander, Roland Juno 106, Sequential Prophet-VS, and Yamaha TX816.

His feeling of security with non-sampling synths stems from his early encounters with monophonic analog machines. "My first experience with synths was with a Roland SH-101 and another terrible thing," he reflects. "I don't even remember the name of it. It wasn't really worth listening to; I was just impressed by how many buttons it had on it. Then later, we [Depeche Mode] were working with a guy who had an ARP 2600, which was really great. All we had were monophonic synths. But no one knew how to play chords anyway, so it was fine."

Prophet VS
SEQUENTIAL

DAVE LEPORI

Erasure's Vince Clarke on Sequential Prophet-VS.

On Erasure's next tour, he plans to control more than just his synths with MIDI. "We had a box built for us," Clarke says, "that converts MIDI information into control voltages, allowing us to use one channel of the sequencer to control our lighting system. Now, we can synchronize the lights to the music. We're also using three slide projectors, which are being controlled the same way. We can get them changing so fast that the images appear to be animated in time with the songs."

Clarke admits that, until Erasure, he had done most of his songwriting alone. Now, Erasure seems to be his most rewarding creative endeavor. "Andy and I are writing *together*," he points out. "It's the first time I've ever actually written with anybody. But it's very refreshing to me. I think it's better because when you both write a song, you know you're both aiming toward the same thing. There's no competition to see who can write the best song. When you've both taken part in it, you both give it everything you've got. As far as I'm concerned, that's what being in a band is all about."

—David Leytze & Michael Davis

WORLDVIEW

IN REMEMBRANCE. Bebop pianist **Joe Albany** died last January, shortly before his 64th birthday, after a long illness. He first won notice for his work with saxophonist Lester Young on a series of 1946 sessions. After subsequent stints with Charlie Parker and other artists, he recorded his first solo album, *Right Combination*, in 1957. Though he lived abroad during the early '70s and failed to cut a high profile after his return in 1974, Albany is remembered by jazz connoisseurs for his tasteful and inventive soloing in the bebop tradition.

EURO TOUR AUDITIONS. Concerts Atlantique is auditioning classical artists for possible European concert tours. The non-profit organization dedicates itself to "classical music, humanitarian goals, and greater understanding between cultures through artistic international communication." It also will book each performer's tour, and pick up travel expenses. Contact Concerts Atlantique, Touring Artists Program, 54 W. 21st St., Suite 1206-A, New York, NY 10010-6908; the phone number is (212) 633-1128.

The three keyboard players with Negativland make light of their image (L to R): Don Joyce, Mark Hosler, and Chris Griggs.

NEGATIVLAND CALLS ON NOISE, SHARP WIT, & AN 8-TRACK

MARK HOSLER WAS 17 when he holed up in his parents' garage in Concord, California, with a 4-track, some razor blades, tapes of found sounds, and some noise-making devices. It was 1978, and he had a vision that he shared with a few other suburbanites. Not having state-of-the-art equipment—nor anything remotely resembling it—wasn't going to get in their way. They made music, and called themselves Negativland.

Late 1987 saw the release of *Escape From Noise* [SST (Box 1, Lawndale, CA 90260), 133], their fourth LP. The product of three years of meticulous planning and editing, *Escape* represents something of a creative and technical pinnacle for Negativland. The group likes to downplay the importance of technology in their work, but one listen to *Escape* confirms that Negativland are virtuosi of technology. It also confirms that if you can dance, so to speak, you don't need designer ballet shoes: *Escape* was recorded in their 8-track home studio.

So who are Negativland? Mark Hosler, a nursery school teacher by day, has been the only constant in the group's line-up. According to the album jacket, he's responsible for synths and guitars, as well as less common pursuits—"bomb parts, David manipulation, tiny metal banjo," and "lots of other noises." Don Joyce's credits include electric timpani, synths, and "noises everywhere." There's Chris Grigg, who plays drums, synths, and handles computer parts and "field recordings." David Wills talks, controls the shortwave, and helps with the bomb parts. And Richard Lyons does vocals, as do they all, and lyrics.

Their sharp wit directed, as usual, at the Establishment, Negativland packaged *Escape* to mock the standard radio-targeted promotional album, using the front cover to proselytize about their greatness. Continuing their parody on record-company marketing, they begin the album with a creepily authoritative voice, who announces that the first cut has been "cross-format-focused for airplay success. . . . Special designer song follows in five . . . four . . . three . . . two . . . one . . ." What follows is an aural roller-coaster of found sounds, bits and pieces from cartoon soundtracks, synthesizer blips, and rhythm loops stolen from other records; there's also lots of unusual usage of digital delay and some tastefully distorted guitar—all of which illustrate the saga of one man's search for peace and quiet. In a pained, maniacal voice, this lost soul keeps pleading, "Is there any escape from noise?"

His cries are answered in chaotic but cohesive pieces drawn from elements of advertising, propaganda, and American fast-food culture. He is eventually driven into insanity. Side one is relatively playful; "Playboy Channel," for instance, concerns the woes of having your electronic orgasm ruined by cable TV interference, and "Over The Hiccups" is an unaltered, *a capella* cut of a nursery-school-age girl hiccuping her way through "Over The Rainbow." On side two, Negativland dissects the more dangerous side of the human psyche in pieces that expose fear, paranoia, fascistic authority, and explosive anger in their most raw forms.

Negativland seems to have numerous influences—from John Cage, in their use of tape manipulation, to the '70s comedy group Firesign Theatre, for their creation of a dramatic experience through sound effects. But after ten years of developing their own sound, Negativland emerges as something no comparison can do justice to. *Escape* may sound like a 32-track creation, but as Grigg points out, nothing was sampled, and the synths were "cheap digital models. It doesn't matter what we use. Almost any instrument has enough weird sounds, if you explore it."

"There's no equipment that will make art," Joyce agrees. "We have an aversion to sampling, because it has a quality that's instantly identifiable. And though our stuff is confused with sampling a lot, it really is quite different, and many people notice the difference."

One piece of equipment that Negativland is proud of is called the Booper. It was custom-built in the band's early days by sometime member and cable TV technician David Wills, a.k.a. the Weatherman. Using amplifiers from transistor radios, he designed them to cross-modulate each other, making various oscillating sounds. From the outside, the Booper appears to be a silver and black box with some knobs and switches. "A few years ago I asked David to modify it slightly," Hosler says. "Now you can send an input pulse into it that will trigger it. You can take a rhythm and put it into the Booper—so that the drum thing is telling the Booper what to do, and the Booper is trying to do what it wants to do but can't, so it has a personality to it. It's an amazingly accurate lo-fi representation of David's personality."

As part of the "big commercial push" lampooned on the album cover, Negativland managed to get, both through the mail and from visits to their studio, authorized contributions from several guest musicians. But if such artists as Jerry Garcia, Fred Frith, Jello Biafra, Mark Mothersbaugh, and the Residents weren't listed on the back, you'd hardly know they were there; in the hands of Negativland, the contributions turn into cameo appearances blended into the multi-layered mix. "I wanted to get people who were known for making noise," Hosler says. "I came up with a conceptual guest list that fit with the album. Then it took on a weird life of its own: The more people I got, the easier it was to get more people. It became this fun way to interact with people who I like but have no reason to speak with. It's silly to think that any one person is so interesting that they can just keep churning out records for years without outside help."

—*Rory Cox*

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OUT OF A MISTY SILICON JUNGLE, OVER DISTANT ANIMAL CRIES OF "WE'RE SHIPPING!" COMES A THUNDEROUS STAMPEDE OF NEW GEAR AT WINTER

BY MARK VAIL

THERE IS A 13TH DIMENSION beyond that which is known to the average musician, beyond the equal-tempered octave. It is the middle ground between sound and silence, between sampling and synthesis, and it lies between the depths of musicians' bank accounts and the peak of their desires. This is the dimension of the almighty manufacturers. It is an area that we call the *NAMM Zone*.

You've read about it before: new products bursting with promises, glimpses of what will/may/could/should be, visions of keyboardists with perfect melodies dancing in their heads and MIDI gear playing the music from the brainwaves, MIDIed popcorn makers and food processors, 76 trombones in a rack-mount box, and software featuring the *ultimate* in artificial intelligence. Where can you get your hands on this stuff? Who brings such hopes and dreams to fruition?

They came together in Anaheim: manufacturers, merchants, musicians, media. The National Association of Music Merchants held their annual winter trade show, which was spread among the Anaheim Convention Center and several hotels in the adjacent area. Software, samplers, stands, notation systems, 20,000,000-bit drum machines, all were represented. There was even a new MIDI wireless system introduced, and it really seems to work.

Along with the excitement of all the latest technology, there was a cloud that may have dampened the spirits of some. News came that Sequential had been purchased by Yamaha, who announced they would use Sequential's former facilities in San Jose, California, as a digital music research and development center, and reserved the right to use product names created by Sequential. It has not been announced whether the Sequential name will still be used.

And the show? What did we find? Lots of the talk wasn't just hype; there were some new trends—nothing earth-shattering, mind you, but things to look forward to. Everybody and their uncles are introducing inexpensive sampled-piano modules that sound good. More and more music software companies are bringing out notation programs, editor/librarians for many popular synthesizers (especially the Roland D-50), and lots of updates to older software (Version 2.19367). Amiga owners can look forward to more support for musical applications, and Atari was very well represented, indeed (welcome to Atari City). Even Apple threw down the MIDI gauntlet, by producing an interface for the Macintosh *and* setting up quite an impressive booth (their first at a NAMM show).

Let's put it this way: there was just so much at the show, we don't have the space to report on everything. We'll hit the highlights, but you'll have to contact manufacturers directly for more details, or check future installments of *Keyboard's* Spec Sheet column. We'd like to apologize in advance to those whose products aren't mentioned below. And don't forget, just because a new model was shown at NAMM doesn't mean it's shipping. We've included details on availability when possible, but remember—there's many a slip twixt the cup and the music store.

There was music in the air everywhere at the show. You couldn't find a quiet place, couldn't get away from electric guitar screams, drummers rat-tat-tatting on MIDIed drum pads, and megademos erupting from every fifth aisle. We searched high and low to find what we wanted, and stayed up late to write it down, so you could plan your strategy on how to ask Mom for enough money to get what you absolutely *need* to make that new Top Ten hit song.

Samplers/Sample Players

Topping our list of cool-sounding samplers at the show was the **Dynacord** ADS Advanced Digital Sampler ($4,500), a 16-voice, 16-bit stereo sampler with eight programmable polyphonic mix outputs, a 44.1kHz sampling rate, 24 seconds of total sample time, expandable to 100 seconds, a SCSI port, and MIDI sample dump compatibility. Projected release date is June.

An awful lot of attention at the **Yamaha** exhibit was focused on the new TX16W digital stereo sampler ($2,895). The 16-voice, 12-bit unit will sample in mono at rates of 16.7, 33.3, or 50kHz, and in stereo at 33.3 kHz. In its stock configuration, the TX16W will store up to 16.3 seconds at the slowest sampling rate; future expansion will raise the available storage to 182 seconds. Other features include a 3.5-inch floppy disk drive, MIDI sample dump standard compatibility, a 40 x 2 illuminated LCD display, and an RS-422 I/O port.

Also for the sampling world, **Roland** has created the S-330 ($2,295) a rack-mount sampler with a 30kHz sampling rate. The 16-voice unit features eight separate outputs, eight-channel multi-timbral MIDI capability, an RGB color monitor output, and a 3.5-inch floppy disk drive. Roland also introduced the HD-5/80 ($2,195), an 80-megabyte hard disk option for the S-550 digital sampler.

Following in the footsteps of its popular FZ-1 16-bit keyboard sampler, **Casio** has announced production of a rack-mount version called the FZ-10M ($2,499), to become available in February 1988.

Oberheim is now shipping the HDX-20 hard disk unit ($1,795) for the DPX-1 digital sample player. The HDX-20 is a 20-megabyte hard disk drive which will store up to 19 floppy disks worth of sample data. A complete bank of sample data can be loaded from the HDX-20 to the DPX-1 in less than four seconds.

New from those "Bob From Hell" guys, **E-mu Systems**, is the Emax SE ($3,295, $4,295 with hard disk; $3,095 for rack-mount, $4,095 with hard disk) with a synthesis enhancement feature called *spectrum synthesis*. The Emax SE performs cross-fading between single-cycle waveforms that are created using an additive-synthesis technique. Pairs of samples can also be convolved (which is not the same as mixing) using a "waveform transformation" function. The resulting sounds are pretty amazing, but the transform process is not fast; would you believe half an hour of data processing? Each of the Emax SE's eight voices can consist of two synthesized timbres, a timbre and a sampled sound, or two samples. And by the way, the Emulator III is finally shipping.

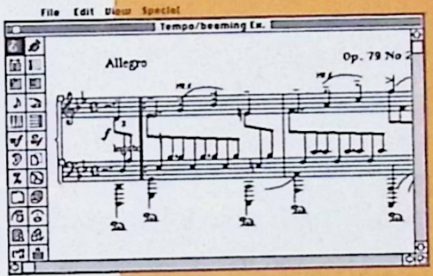
Among other items prominently displayed at the **Kurzweil Music Systems** booth were the 1000 Series of modules. See the Keyboard Report on page 136 for an in-depth review of these units.

New from **Korg** are the M1 keyboard ($2,500), a 16-bit sample player with a built-in eight-track sequencer; the Q1 MIDI sequencer, with SMPTE and MIDI compatibility, 3.5-inch disk drive, and optional SCSI hard-drive interface; the S1 ($2,400), a 16-bit stereo sampler/drum machine; and the P3 piano module ($725). Of these newly announced products, only the P3 was demonstrated; the rest were locked in separate glass cases. Being demonstrated in Korg's display room was the 731 digital sample player, which is the M1 with a Japanese model number. Because

DYNACORD
ADS
28

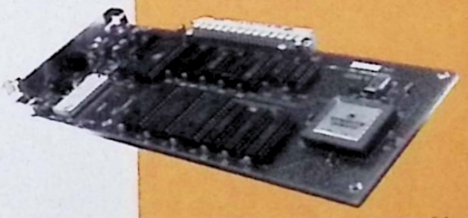
Dynacord ADS stereo sampler.

Korg 707 FM synthesizer.



Coda Finale notation software for the Macintosh.

Invisible Products MS3000 studio stand.



Digidesign Sound Accelerator sampling card for Macintosh II and SE.

TASCAM 238
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For example, you can "ping pong" or transfer the music from several recorded tracks onto just one. Which clears those tracks to record still more. In this way, you can easily create more than a dozen tracks (voice, instrument or special effects) from just one four-track recorder.

And the dbx® noise reduction means you'll hear more music and less tape hiss. It's the same system that professional studios use.

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band together.

And speaking of effects, you can also plug in digital effects units like our SPX90II. And add dramatic stereo echo, reverb, chorus, etc.

The MT2X is also designed to accept FSK sync from a drum machine, music computer or MIDI sequencer. And even if your sequencer can't do tape sync, our optional YMC2 MIDI FSK converter will get you on track.

Each channel has Hi and Lo EQ controls for shaping each instrument's tonal qualities, and LED meters indicate the optimum input level.

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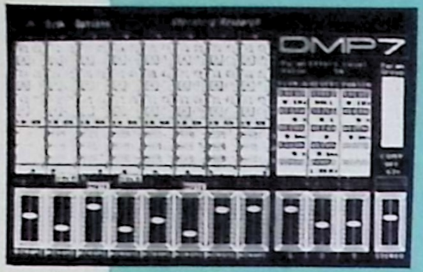
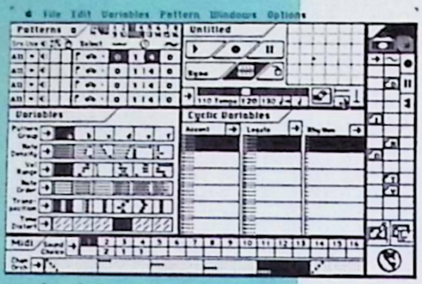
Korg M1 (731) sample-playing keyboard.



Steinberg/Jones DMP7 Desktop Mixing software for the Atari ST and the Yamaha DMP7.



Mark Of The Unicorn Performer Version 2.

Roland S-330

Roland S-330 sampler.

Roland C-20 digital harpsichord.

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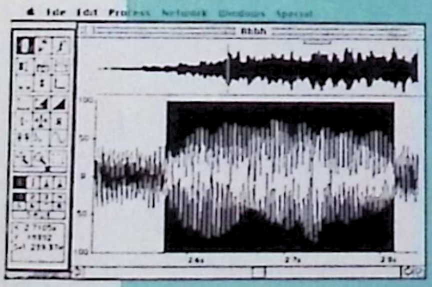
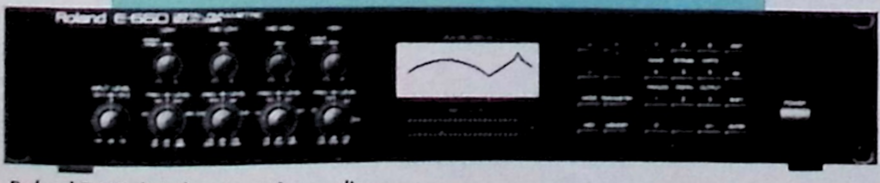
Gambatte MidiStar wireless MIDI system.



Blank Software Alchemy.

BETH BALLARD

Mellotron sampler.



Roland E-660 digital parametric equalizer.

of a new pricing policy that reminds us of home organ and used car sales practices, Korg has abolished list pricing and only quotes price ranges. So all Korg prices quoted in this article are approximate rather than exact.

We're still trying to figure out how *Penthouse* pets of the month tie in with sampling. In fact, we wonder if anyone noticed that **Mellotron** was marketing anything musical at all in their booth, since it was hard to notice anything except the four bubbling beauties signing autographs (not that we're complaining . . .). In fact, Mellotron's long-awaited 16-bit sampler (under $25,000) was on display in a nearby hotel meeting room. The unit is built around an IBM PC/AT. In addition to the Mellotron sampling hardware, **Robert Keller**'s 48-Track PC sequencer and **Turtle Beach**'s Vision sample-editing program come bundled with the system. Also on display in the Mellotron booth was their MuArt IBM interface, featuring four inputs, eight outputs, and SMPTE compatibility.

360 Systems was also demonstrating the Professional Midi Bass ($595), along with an impressive list of available sampled sound sets costing $29.95 for each two-sound chip.

Synthesizers

Roland extended its linear synthesis line with three new synthesizers: the D-10 ($1,395), the D-20 ($1,795), and the D-110. These instruments are eight-voice, multitimbral, linear arithmetic instruments with reverb, stereo outputs, and a 64-sound rhythm section included. In addition, the D-20 features a 16,000-note, nine-track sequencer (eight synthesizer parts and one rhythm part). The D-110 is a rack-mount version of the D-10.

The synthesizer news from **Oberheim** was the announcement of the Matrix-1000 MIDI synthesizer module ($575). The six-voice analog Matrix-1000 offers 800 preprogrammed sounds in ROM and an additional 200 sounds in user-loadable RAM. The Matrix-1000 is programmable via MIDI from either a Matrix-6 or 6R, or from any Matrix-6-compatible patch librarian or editor computer software. When used in conjunction with a Matrix-6 or 6R, the Matrix-1000 creates a 12-voice system.

Casio announced production of a new generation of synthesizers utilizing interactive phase distortion. The VZ-1 ($1,395) is a 16-note polyphonic synthesizer featuring eight different timbres simultaneously, eight-stage envelope generators, a five-octave velocity- and pressure-sensitive keyboard, four individual outputs, a built-in graphic LCD display, and three wheels (one pitch-bend, two programmable).

Yamaha introduced the DX11 ($995), a four-operator FM synthesizer with a 61-note velocity- and pressure-sensitive keyboard and internal circuitry similar to the TX81Z FM tone generator. In Japan, they're calling this model the V2. They changed the export designation, according to our sources, when distributors in Britain pointed out that naming a product after a weapon that had devastated London wasn't likely to gain Yamaha many new friends.

Now that they're really hitting the synthesizer stride, **Kawai** is introducing the K1, featuring a 61-note, weighted-action, velocity- and pressure-sensitive keyboard, 32 voices, 256 one-second PCM waveforms, and stereo outputs. The K1m is a keyboardless version. Both units should be shipping in April. (Prices not available.)

New from **Korg** is the eight-voice 707 FM digital synthesizer ($950) with a 49-note velocity- and pressure-sensitive keyboard, 16 oscillators, multi-timbral operation, performance editor, 100 internal programs, 40 on a RAM card, and 400 on a ROM card.

Other Keyboards

Yamaha has introduced the Disklavier Piano (price not available). This normal-looking acoustic upright piano features a digital sequencer which records all mechanical piano actions, then can repeat the sequence back exactly as played. You can change volume, tempo, and transposition, either from the sequencer's front panel or from across the room using a wireless remote control. The Disklavier is also MIDI-compatible; you can control external MIDI instruments from its keyboard, or the Disklavier will play and record input from an external MIDI keyboard. (Note that there is a 1/2-second delay in the Disklavier's piano action, so you must take this into consideration when sending it MIDI data.) Although the Disklavier's sequencer doesn't allow editing, data stored on the sequencer's 3¼-inch disk is compatible with Yamaha's new QX5 sequencer, so after the sequence is edited, the disk can be read from the Disklavier and all changes will be reproduced.

In the digital-piano realm, Yamaha announced two new products. The rack-mountable TX1P ($895) offers sampled voices of a grand piano, upright piano, electric piano, harpsichord, and vibraphone. The 16-voice stereo TX1P includes chorus, transposed delay, and chord play effects, and responds to MIDI velocity data. The PF85 ($1,895) is a keyboard version of the TX1P, adding a weighted 88-note piano-style keyboard with 127 levels of velocity sensitivity, MIDI, and a built-in 20-watt stereo speaker system.

Casio joined the digital piano wars by introducing two 16-bit pianos, the CDP-3300 ($1,899) and the CDP-3000 ($1,999).

Casio also introduced a number of new personal keyboards featuring PCM sounds. Among these were the DM-100 ($299.50), a double mini-keyboard preset synthesizer and sampler, and the CT-640 ($399), a full-size keyboard with MIDI, tone mixing, and stereo output with built-in speakers.

Roland countered with its commercial digital piano, the HP-6000C (price not available), with structured adaptive synthesis representations of three concert grand pianos, two electric pianos, harpsichord, clavichord, and vibraphone. Two other digital pianos are available: the RD-300S ($2,395), with an 88-note keyboard, and the RD-250S ($1,995), featuring a 76-note keyboard. These digital pianos feature the same sounds as the HP-6000C. If you want your digital piano in a rack, check out Roland's P-330 ($1,395), which features the same sounds as their other digital pianos.

Roland also has two new digital harpsichords, the C-50 and the C-20, for $4,500 and more. Both harpsichords have 61 light-weighted keys. The C-50 features a four-speaker, four-amplifier sound system, while the C-20 has a stereo sound system.

Also in the digital piano domain, **Korg** introduced three new Concert Series Pianos: the C-7000, the C-7100, and the C-7500 (prices not available). Common to all three are MIDI compatibility, a high-fidelity stereo speaker system, built-in four-channel surround-sound, three-stage reverb, transposition, soft, sustain, and sostenuto pedals, and a headphone jack. Available sounds include two digitally sampled acoustic pianos, vibes, electronic piano, and harpsichord.

For the personal keyboard user, **Technics** introduced two new portable keyboards, the SX-K700 (61-key) and SX-K500 (49-key). These MIDI compatible keyboards offer over 100 PCM-sampled melody sounds and 30 PCM-sampled percussion sounds and sound effects, feature programmable key split, have built-in stereo speakers, and respond to velocity via MIDI or from their own keyboards.

New in Technics' line of home organs is the Model SX-PR80 (price not available), which features 20 PCM-sampled instruments and a built-in four-channel digital sequencer with MIDI compatibility. The organ also includes an 88-note keyboard and a stereo 35-watt amplifier, with the SX-PR80's speakers mounted in a baffled enclosure to enhance bass reproduction.

If you're wondering about the state of MIDI in the worlds of accordions and organs, these were also represented at the show. **A. Baldoni Music Service** featured their new Baldovox Prog. 85 ($5,770-$6,825), a 41-note, hand-cut plexiglass accordion with an external unit equipped with 50 programmable presets and MIDI outputs. Internally, the Baldovox Prog. 85 features three- or four-reed straight or chambered reeds, with three individually controllable microphones in the treble section and one in the bass section.

Solton had their Superpolyvox electronic accordion on display, as well as the MDR 16 multitrack digital recorder. The Superpolyvox features 60 sound programs, seven internal microphones, and 24 preset rhythms. The MDR 16 is a 16-track MIDI recorder with tape recorder-like operation. (Prices were not available for these products.)

Galanti unveiled their new Praeludium III ($32,000-$35,000) three-manual classical organ with digital samples and MIDI.

Sequencers

The **Akai** booth was really dancing, with Roger Linn demonstrating the MPC60 ($4,995.95), featuring MIDI sequencing and drum sampling. Detailed in-depth in our Summer 1987 NAMM coverage (*Keyboard*, Nov. '87), the MPC60 (formerly known as the ADR15 Drum Machine/Sequencer) is now available. Also on the floor was the Akai MWS76 MIDI keyboard controller/sequencer. Still in prototype stage, the MWS76 will feature the same sequencer, sync modes, and display found in the MPC60, with a built-in, weighted-action, velocity- and pressure-sensitive keyboard. (No price was available.)

Roland introduced two new versions of its Microcomposer: the MC-500 Mark II ($1,795) and the MC-300 ($1,095). The MC-500 Mark II is an eight-track sequencer which will record data on all 16 MIDI channels on each track, and features a built-in 3.5-inch, double-sided, double-density disk drive. The MC-300 includes a 40-character LCD display, a numerical keypad, and a 3.5-inch disk drive. Roland also announced the release of Turbo-500 software (price not available) for the MC-500 Mark II, the MC-500, and the MC-300. This software will enhance the capabilities of all three of these sequencers by adding editing features such as data timing shift by channel, track, or MIDI event.

New in the sequencer domain from **Kawai** is the Q-80 ($795). Due to be available in May, the Q-80 features 32 tracks, indepen ent track looping, tempo mapping, 10 son storage, 26,000 notes, and a built-in 3.5-inc disk drive. Also new from Kawai is the Q- sequencer ($225), which will store a total of 5,000 notes in four sequence locations.

Korg was showing a new eight-channel MIDI sequencer, the SQD-8 ($650). It features a built-in quick-disk drive which can also store system exclusive MIDI data from external devices.

MIDI Gear

Would you pay $2,995 for a MIDI cable? If so, talk to **Gambatte**, whose MidiStar is an all-digital wireless MIDI system. We saw Gambatte's sixth-floor-to-the-parking-lot demonstration and were impressed. Using "Spread Spectrum technology," MidiStar will transmit MIDI data over 200 feet. According to the manufacturer, it will not suffer from cross interference when used in conjunction with other wireless equipment, and you can use up to four MidiStars at one time. There hasn't been an attempt to market a wireless MIDI system in the U.S. since Nady was unsuccessful a couple of years ago. Lemi markets one in Italy, but we've heard that they had problems getting FCC approval, so it has never been released over here.

Tired of having to reassign your pitch and mod wheels to cover other MIDI continuous controller numbers? **Musically Intelligent Devices** were demonstrating the IFI8 ($1,695), a table-top MIDI controller which can work in conjunction with the megaMix automated mixing system or as a stand-alone device. It features eight assignable sliders for data entry, a 32-character display, 64K RAM (256K optional), 128 programmable presets, and separate MIDI and MIDI Time Code sync connectors. Anticipated availability is March 1988.

AMR introduced the MIDI Manager ($399.50), a device which provides filtering, routing, mapping, and patching of MIDI data, eight programmable logic outputs via a DB-09 port, and a 40-character by two-line LCD display. Also from AMR is the MIDI Director ($99.50), a hand-held MIDI controller for changing programs and controlling a MIDI sequencer from a remote location.

New from **Korg** are the DT-1 tuner ($300) and the KMP-68 MIDI patch bay ($280). The KMP-68 is a six-in, eight-out patchbay with rotary-switch selection of outputs. Again, Korg's announced prices are approximate.

Musician's Service Complex ($149.95) introduced the MIDI Rail Modification ($995.95, including installation), a contactless key scanning system to retrofit your favorite acoustic piano for control of MIDI synthesizers. MIDI Rail Modification transmits 127 levels of attack and release velocity, will work with 64-, 73-, and 88-note keyboards, allows splittable keyboard settings and reassignable consecutive MIDI channels, and has sustain pedal detection and a pitch-bend/modulation joystick.

360 Systems displayed the Midi Patcher ($329), an eight-by-eight routing system featuring non-volatile memory storage of 99 user presets, voice mapping, and MIDI patch change capability; the Midi Data Buffer ($129), a 2-by-12 MIDI switcher and distributor; and Midi Merge Plus ($295), a channel merger, data filter, and transposer featuring two inputs with individual thrus and two merged outputs.

A 15-by-16 programmable MIDI patch bay was on display at the **KMX** booth. The $449 patch bay features MIDI merge on inputs 1 and 2, and 99 presets stored in non-volatile memory. KMX also has a two-in, eight-out MIDI through box with merging for $179.

Forte Music, the acoustic piano MIDIfier experts, introduced the Mentor MIDI Network Controller ($1,450), a rack-mounted processor with a data display and a small remote programmer/controller. Mentor features MIDI mapping, filtering, eight independent MIDI data processors, two MIDI inputs, and four MIDI outputs.

Passport released The MIDI Transport ($459.95) for the Macintosh. This MIDI interface features two MIDI ins and five MIDI outs and audio tape ins and outs, and incorporates SMPTE-to-MIDI Time Code conversion.

Look down there. That's **Yamaha**'s new MFC2 ($325) MIDI Foot Controller for the WX7. With the MFC2, your toes can change the MIDI send channel, hold a key, alter patch numbers, and remap wind and lip controllers. The MFC2 will be available in March.

For your eyes only, **Roland** has introduced the A-110 MIDI display ($395). This rack-mount unit enables you to visually observe MIDI note-on messages on the A-110's 88-key front panel display.

Datastream was showing two new MIDI-related products. The MIDI Analyzer ($150), a hand-held unit designed to display MIDI data, includes a 40-character buffer and displays data in Hex and event codes for ease of analysis. We've been using a prototype of this device in the *Keyboard* office for months, and would cheerfully fight giant trolls if they tried to take it away from us. MIDI Master ($495) is a one-input, four-output programmable MIDI signal processor which performs the same functions as the MIDI Analyzer, along with MIDI filtering and mapping.

Drum Machines

If the Akai MPC60 and Korg S1 (mentioned above) aren't meeting your beat, you might want to look further into programmable rhythm. **Yamaha** featured two new products. The RX7 ($895) has 100 built-in PCM samples, including acoustic and electronic drums and percussion, sound effects, and a collection of guitars, and each voice can be edited for pitch, volume, pan, and decay. The RX7's memory includes 100 patterns of up to 99 measures each, 20 songs, and three song chains; the user can dump memory to cassette tape, RAM4 cartridge, or via MIDI to external sys-ex recorders. Yamaha also introduced the RX120 ($350), featuring 38 sampled percussion sounds and two footswitch jacks for remote triggering of a fill and sequence start/stop.

Kawai has a new drum machine, the R-50e ($499), which features 24 polyphonic sounds, built-in effects, stereo outputs, and individual note programmability (pitch, pan, and effects).

Macintosh Software

A number of developers were displaying in the (gasp!) Apple booth. Of them, **Southworth** wins our award for most ambitious developer in that they announced a veritable ton of new products. Two new sync boxes, Video JamBox ($649) and JamBox/2 ($269) were on display (the latter will run with an Atari, IBM, and Mac, and features many of the JamBox/4's sync functions). One-Step ($69) is the user-friendly 16-track version of MidiPaint. Southworth also announced their Max Audio line, which includes the Analog Card, a stereo sampling card (claim—20-bit linear resolution) for the Mac II ($1,400) and SE ($1,100). There will also be a companion DSP (digital signal processing) card ($3,990) for doing real-time digital processing. It includes—ready?—*eight* Motorola 56000 DSP chips! Projected availability on the Max Audio line is sometime by late summer or early fall.

Coda Music Software introduced Finale ($795) for the Macintosh. This desktop music publishing software prints sheet music and plays musical scores via MIDI. The program supports standard musical conventions, and Coda claims Finale's integrated and intuitive environment can be quickly learned by the beginner, but features enough depth to satisfy the experienced composer. Features include cross-staff beaming, page sizing, reverse stemming, and analysis and transposition of chord symbols. MIDI playback with dynamics and repeats is supported. Coda expects to have Finale available in the Spring of '88.

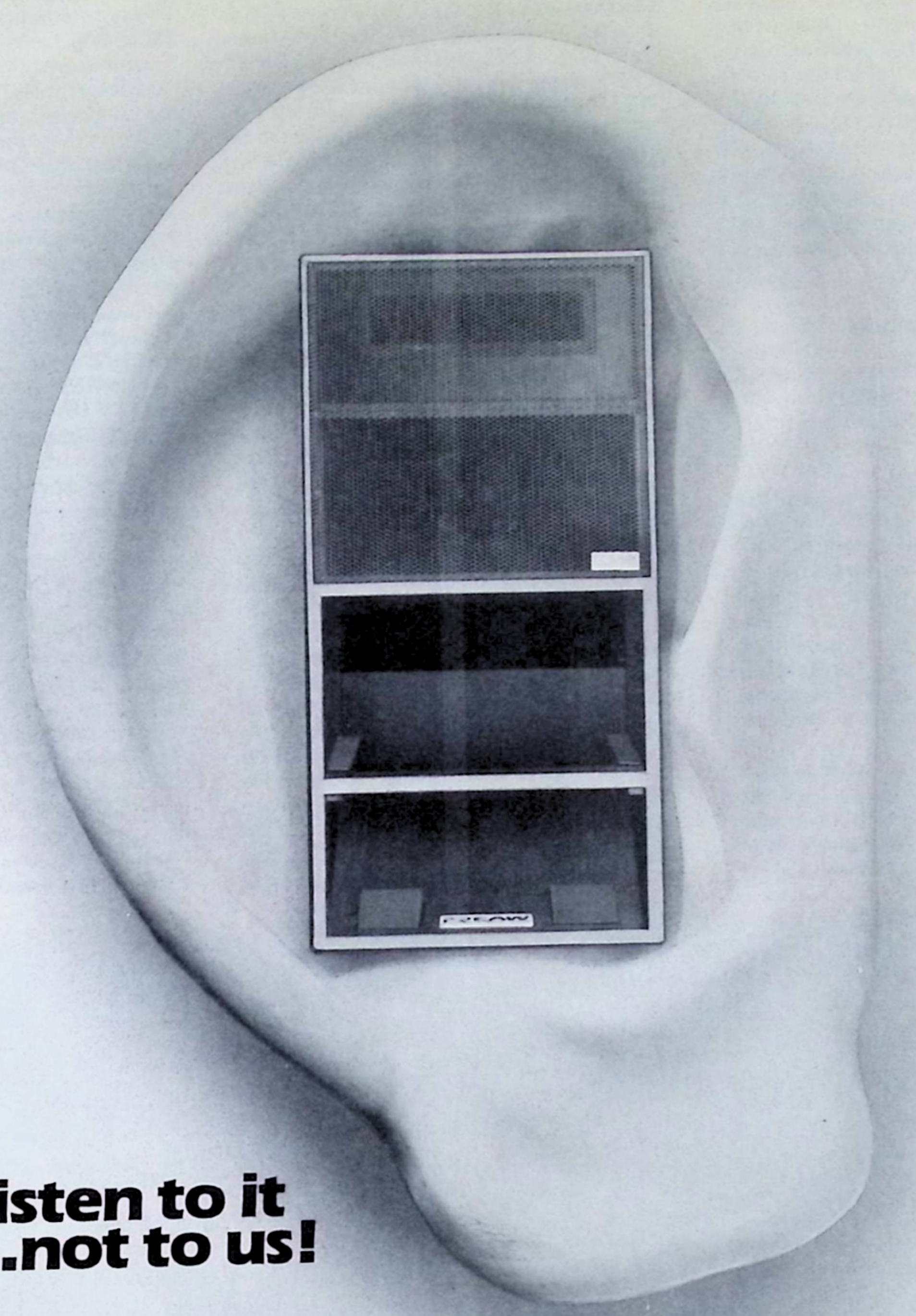
Also for the Macintosh is Music Publisher Fortissimo ($595) from **Graphic Notes**. Fortissimo includes such features as a WYSIWYG (for the uninitiated, that's "what you see is what you get") screen display, automatic proportional spacing of notation, lyric integration, audio playback from Mac's speaker (with MIDI compatibility projected for mid-1988), and automatic placement of ties, accidentals, bar indents, accents, and staccato markings.

Besides announcing updates to Sound Designer ($395 for Mirage and other samplers; $495 for all others) and Softsynth ($295 for Macintosh and Atari), **Digidesign** introduced the Sound Accelerator ($995), a new DSP (digital signal processing) card for the Macintosh SE and Macintosh II. With the Sound Accelerator and Sound Designer, you can load samples into the Mac and play them back in stereo with 16-bit resolution. Sound Accelerator is a hardware upgrade for Sound Designer and SoftSynth, providing the user with real-time editing capabilities, including digital equalization, merging, and timbre adjustments. Digidesign also demonstrated SampleVision ($495), a visual editor for the IBM PC and Akai S900.

For the sampling masses, **Blank Software** was showing Alchemy ($495), 16-bit stereo sample-editing software for the Macintosh. Currently, Alchemy supports the Ensoniq EPS and Mirage, the Akai S900, the E-mu Emax and SP-1200, and the IMS Dyaxis sample-to-disk system. This program can perform Fast Fourier Transform analysis and resynthesis, will communicate over MIDI, SCSI, and RS-422, and can transfer sample data from one of its supported sample formats to another.

Passport Designs released Master Tracks Pro Version 2.0 ($349.95) for the Macintosh, Macintosh II, and Atari ST. The new version of Master Tracks Pro includes a dialog window for automatic punch-in and -out programming, a conductor track data window which graphically reflects changes made to the conductor track from the change window or with the pencil and eraser tools, and standard MIDI file compatibility. Owners of Master Tracks Pro can receive the update by mailing in their warranty card, or by sending in their backup disk with $5 for shipping and handling. Passport also introduced Master Tracks Jr. (Macintosh, $149.95; Atari ST, $129.95), a low-cost personal MIDI sequencer. Master Tracks Jr. features 64 tracks, transport controls, graphic representation of sequencer data, and conductor control for tempo changes within a sequence.

For the film or video composer, Passport announced Clicktracks ($249.95) for composing music to be played by orchestra or MIDI-sequenced instruments. Clicktracks accepts video or film cues expressed as SMPTE numbers or in frames and provides tools for mapping cues against the score and redefining meter, beat, and tempo.



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Opcode announced the release of five new editor/librarians for the Macintosh. MIDI instruments supported are the Yamaha DX7II/TX802, TX81Z/DX21, and SPX90, the Roland D-50, and the Ensoniq ESQ-1. (Prices were not available at press time.)

Korg is marketing a Macintosh editor/librarian program called ProEdit ($100). The program is currently available for the DW-8000; in February, it will be available for the DDD-1 and DDD-5.

Atari Software

Many new products are appearing for the Atari ST line of computers. **Intelligent Music** introduced a version of their automated composition program M for the ST. Like its Macintosh-based brother, M for the Atari ST includes independent pattern looping, selective randomization of notes, three independent channels for each track, and automation of velocities, densities, rhythms, articulations, and accents. The ST version of M lists for $200.

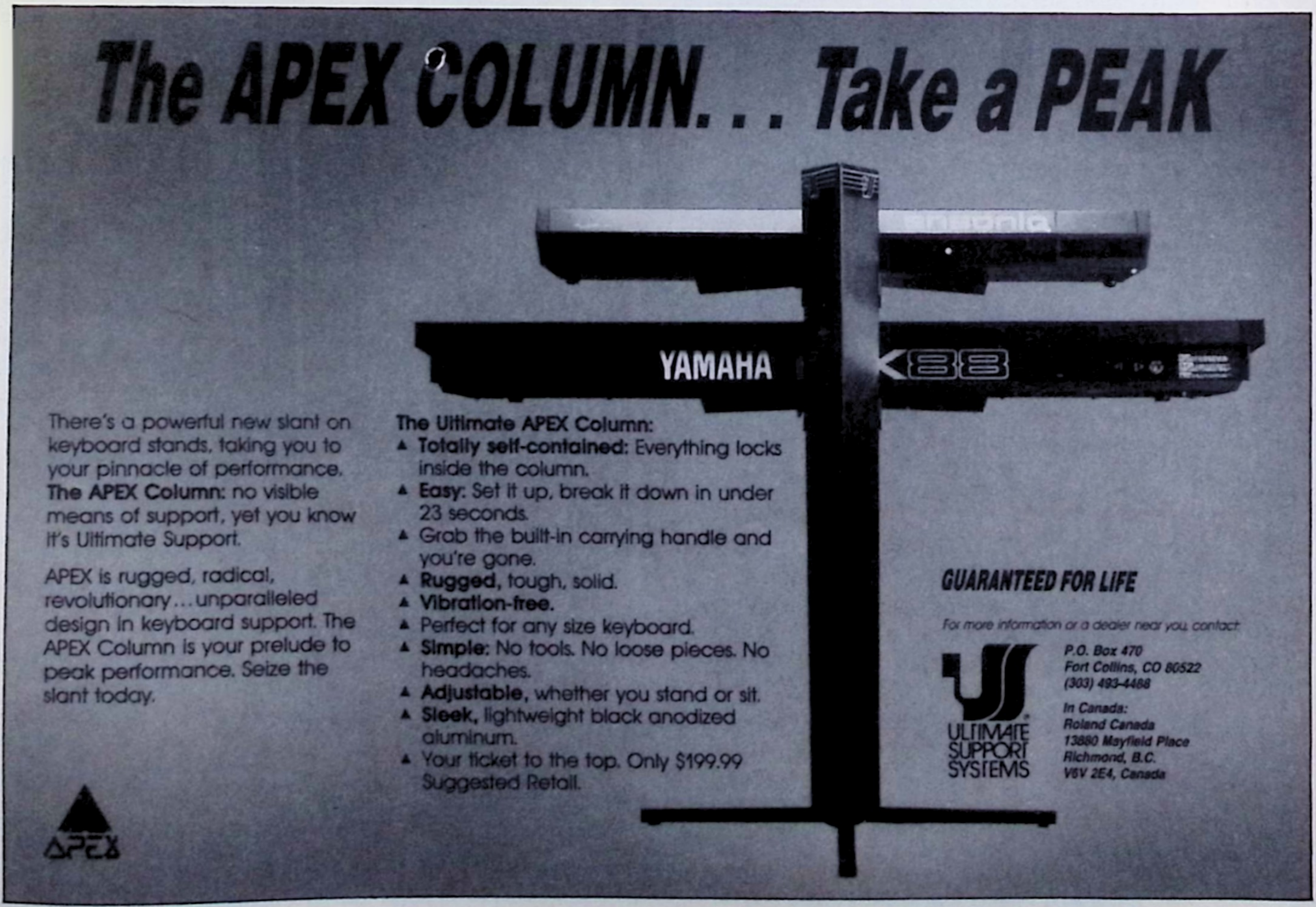
Steinberg/Jones, a newly formed distribution company made up of **Steinberg Research** and **The Russ Jones Marketing Group**, announced release of a number of new programs for the Atari computers. Pro-24 III is the latest revision to the original Pro-24 sequencer. Pro-24 III includes the ability to record from one to four tracks simultaneously and a logical editor which allows the user to define specific logical criteria to be used by the program to decide whether or not to edit the notes in a sequence. Retail price for Pro-24 has been lowered to $295. Desktop Mixing DMP7 ($590) is an editing program for the Yamaha DMP7 MIDI-controlled mixer. Time-Lock ($375) is a SMPTE interface to enable an ST running Pro-24 to sync with SMPTE time code. The Ear ($99) is an ear-training program which includes tests on chords and a number of different scales. Steinberg/Jones made some additions to its Synth Works line of synthesizer editor/librarian programs, including versions for six-operator Yamaha synthesizers (reviewed on page 155 of this issue), the Ensoniq ESQ-1 and ESQ-M, and the Roland D-50 ($259 each); and versions for the Roland MT-32, the Yamaha FB-01, and the Yamaha TX-81Z ($199 each). Finally, Soundworks ($350) is a visual sampling editor for the Atari 1040 ST and either the E-mu Emax or the Sequential Prophet 2000/2002.

The Russ Jones Marketing Group is also distributing software for the Atari ST by **Compu-Mates.** This MIDI-software development company introduced Final Trak, an 80-track sequencer, and Final Score, a notation program. Each of these software packages list for $199.95. Compu-Mates also produces a series of editor/librarian programs under the title SynthDroid. The newest addition to this series is DSS-1 SynthDroid ($129) for the Korg DSS-1 Sampling keyboard. This software can produce user-definable wavetables for the DSS-1 and provides extensive visual editing features, as well as allowing the user to hear the sound from the Atari computer before dumping the data into the DSS-1.

Hybrid Arts demonstrated the ADAP One 16-bit RAM-based stereo digital audio sampling system, and the ADAP Two stereo 16-bit linear, 44.1kHz direct-to-hard-disk sampling workstation. Both of these systems work on the Atari 1040 ST or mega ST with Hybrid Arts' ADAP SoundRack. The ADAP Two includes a digital-to-digital AES/EBU interface which allows direct digital communications with other digital systems and offers a total sampling time of up to 48 minutes with a 720-megabyte hard drive. Price for the ADAP One is $1,995. An ADAP Two workstation is $2,995, or $1,000 for upgrade from ADAP One. ADAP Two is also available with an AES EBU digital-to-digital interface and SMPTE interface for $3,500.

Hybrid Arts also had an entry in the notation software race. EZ-Score Plus ($99.95; $150 after April 1), for ST computers, offers input options including mouse, computer keyboard, or MIDI, and is compatible with any of Hybrid Arts' line of MIDITrack ST sequencers. The program also prints detailed guitar symbols and will play back music through MIDI or the Atari.

Drumware introduced two visual waveform editors for the Atari ST: Soundfiler ST and Genwave/12. Soundfiler ST is a sample editor for the Akai S612, X700/S700, and S900. Genwave/12 was designed to work with several 12-bit samplers, including the E-mu Emax and SP-1200, the Akai S900, and the Sequential Prophet 2000/2002, and is also compatible with the MIDI Sample Dump Standard. Genwave/12 features a 16-bit multi-mode



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digital equalizer with variable cut/boost, frequency, and Q controls. (Prices: Genwave/12, $299; Soundfiler Akai S900, $299; Soundfiler Akai X7000/S700, $249; and Soundfiler Akai S612, $199. Soundfiler S612 is also available for the Apple IIe and II+ for $149.)

A new British company, **System Exclusive** introduced the Iconix sequencer (price not available) for the Atari ST.

For the genetic scientist/musician who owns an ST and a Roland D-50, **Command Development** introduced Offspring, a patch editor which creates a bank of new patches based on two parent patches. This program reportedly uses discoveries from the field of genetic engineering; hope it isn't contagious.

IBM PC/Compatible Software

Dr. T's Music Software introduced two editors for the IBM PC and compatibles, one for the Roland D-50 and the other for the Casio CZ line. Each product lists for $129.

Voyetra was demonstrating all its IBM PC/AT and compatible software, including the three versions of Sequencer Plus, Mk I ($99), Mk II ($295), and Mk III ($495); Conversion Plus ($99), for transferring MIDI files from Sequencer Plus to Personal Composer and vice-versa; Patch Master Plus ($195), a universal librarian, network organizer, and MIDI data analyzer; and Sideman DTX, a voice editor, randomizer, and librarian for Yamaha's six-operator FM synthesizers.

For those in search of practically unlimited sequencer storage space, **Dominant Functions** was showing Tiff ($99), a 64-track sequencer for the IBM PC or compatible which stores to and plays sequences directly from hard disk.

Erato Software presented its Music Manuscriptor ($1,200), which requires an IBM PC-AT compatible computer and features a digitizer tablet, mouse, plasma display, 128th-note resolution, and MIDI input capability. Music Manuscriptor should be released prior to the June '88 NAMM trade show.

Also for the IBM PC-AT and compatibles is **Dynaware**'s Prelude ($225), which supports both sequencing and notation capabilities. Using a Mac-like display and input from either mouse or MIDI keyboard, Prelude combines a tape-recorder operation sequencer, drum pattern, and scoring.

Dynaware also produces a MIDI software package for the IBM PC-AT and compatibles and the Roland MT-32. Ballade (price not available) functions as both a notated-score sequencer and an editor. The sequencer portion of Ballade features ten tracks, one for the MT-32's rhythm section, eight for the MT-32's tone generators, and one for control of external MIDI synthesizers. Sequencer input is accomplished by real-time playing of a MIDI keyboard, step-time entry, or mouse entry on a musical staff. The editing portion of Ballade allows editing by either numerical input or graphic manipulation with a mouse.

From **MIDI Concepts** come two sequencing programs for the IBM PC/XT, PC/AT, '386 machines, and most compatibles: Concepts: One, a 32-track professional-quality sequencer; and Concepts: Two, a budget-priced 16-track sequencer for the beginner. (Prices not available.)

Amiga Software

Sound Quest has come out with a series of graphic editor/librarians for the Amiga. Included in the series are versions for the Roland D-50 ($150) (see the review on page 160), the Roland MT-32 ($150), the Yamaha DX7II ($175), the Yamaha DX7 ($150), the Yamaha TX81Z/DX100/27/21 ($125), and the Casio CZ series ($125). Sound Quest also offers a generic librarian ($125).

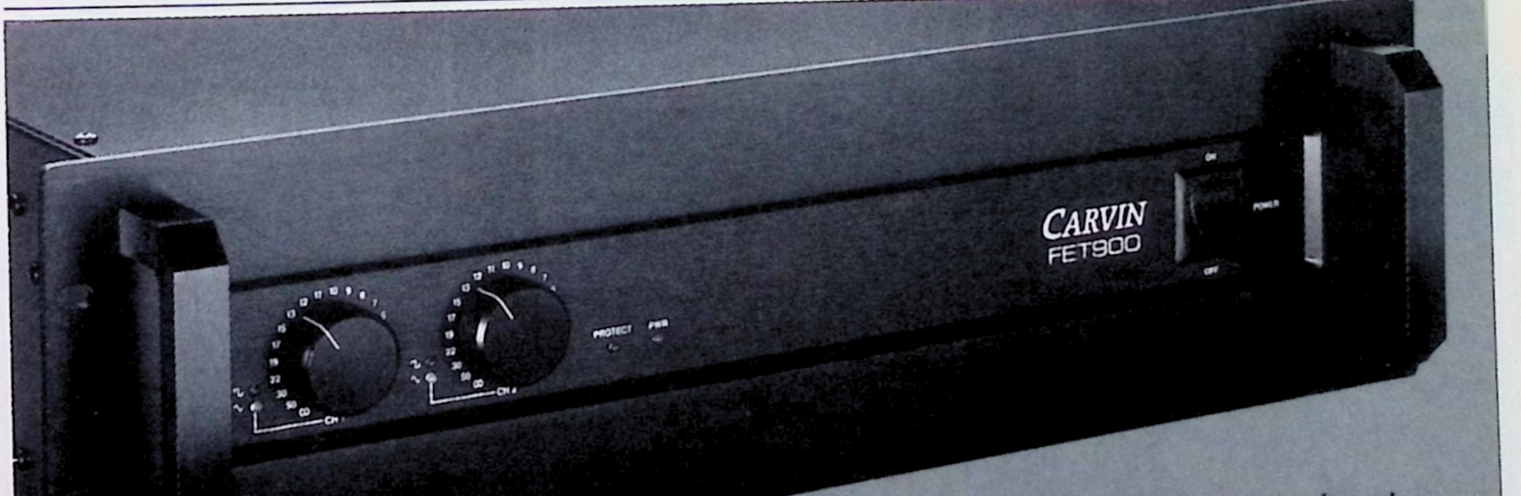
Dr. T's is now shipping Keyboard Controlled Sequencer ($249) for the Amiga.

Intelligent Music was demonstrating a pre-release version of M for the Amiga, which is anticipated to be available this summer for $200.

Software For Other Computers

Though interest in music applications for other computers has dwindled, new products are still being announced from time to time. **Pyware** introduced a notation package for the Apple IIe and IIGS called Music Writer. Music Writer comes in two configurations: Music Writer Professional System ($595 with MIDI software) and Music Writer SE ($295).

Sonus has a new Roland D-50/D-550 editor/librarian for the Commodore 64/128. Price for D-50 Design is $149.95. An ST version ($199) should be available by the time you read this, and versions for the Macintosh and



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IBM PC and compatibles are in the works.

Recording/Sound Reinforcement

Tascam held a news conference to introduce the new 238 Syncaset ($2,295) eight-track analog cassette. Using a staggered-head mounting scheme, this new recorder features a signal-to-noise ratio and cross-modulation statistics which equal a typical four-track cassette deck. The unit features built-in dbx noise reduction, which is defeatable on each channel separately, and servo drive control for SMPTE sync capability.

In an effort to squeeze as much into as small a space as possible, **Roland** has achieved a new high for channels per inch with the M-240 and M-160 line mixers. The M-240 ($1,495) features 24 channels, while the M-160 ($1,095) is rack-mountable and has 16 channels. Each channel features three stereo effect sends and a mono auxiliary send. Channel controls include pan, sensitivity level, and output slider. A pre/post selection switch is provided for the auxiliary send.

In the digital recording realm, **Integrated Music Designs** has released Dyaxis, a Macintosh-based recording and editing system which stores data directly to hard disk. Total recording time ranges from seven minutes to two hours, depending on the sampling rate and system configuration. Dyaxis files are compatible with Digidesign's Sound Designer and Blank Software's Alchemy. A basic, 102-megabyte system goes for $6,995, while the top-of-the-line, 1.6-gigabyte system costs $43,500. (Prices do not include the Macintosh.)

JL Cooper introduced MixMate ($995), an eight-channel automated mixer with dbx VCAs and SMPTE/FSK/MIDI sync capabilities. Optional is the MixMate Plus ($245), a computer interface for the Macintosh or Atari ST.

From **Peavey Electronics** comes the new PLM 8128 ($899.50), a MIDI-programmable line mixer featuring eight input channels, three effect sends per channel, a 40-character by two-line back-lit LCD display, balanced XLR inputs on channels 1 and 2, 1/2-inch inputs on all eight channels, and stereo outputs. Also available is the PLM 8128E ($699.50) expansion module for the PLM 8128. Up to three PLM 8128Es may be chained together with a PLM 8128 for a completely MIDI-programmable 32-channel automated mixing system.

Korg's C2 MIDI mixing console features eight channels of MIDI-programmable level, pan, two effect sends, and equalization. Korg also introduced a number of rack-mount units, including the KEC-42 equalizer/dynamics processor and the KMX-122 12-channel rack-mount mixer. Prices were not made available.

AMR introduced two new digital reverb units. The AddVerb ($389.50) is a MIDI-controllable 16-bit stereo multi-effects processor with 100 preset effects, including delay effects. The UniVerb ($299.50), which is also a 16-bit digital processor, produces 30 reverb effects.

Roland has produced two new audio processing products. The E-660 ($1,995) is a two-channel, four-band, digital parametric equalizer. The R-880 ($3,995) digital reverb has four independent delay lines, two inputs, and four outputs, and provides reverb, chorusing, multi-tapped delay, digital parametric equalization, and compression. Both of these units incorporate the new standard AES digital audio transmission format.

Lexicon-con-con-con introduced the LXP-1 multi-effects processor, a digital device which produces reverb and delay dynamically controllable through MIDI. Lexicon also announced production of the MRC, a remote controller for the LXP-1, as well as a macro-instructional programmer for six-operator FM synthesizers. (Prices not available.)

AKG Acoustics were proudly displaying the ADR 68K digital reverb and effects processor with the V4.00 hardware and software enhancement. This "pro audio sculptor's tool" features an extensive MIDI implementation, a 16-bit, 12-voice mono sampling capacity of 32 seconds (16 seconds in stereo with six simultaneous voices), eight simultaneous effects, and over 150 factory presets. The ADR 68K with V4.00 lists for $6,990. The V4.00 upgrade separately costs $1,995.

For Harmonizer fans, **Eventide** introduced the H3000 Ultra-Harmonizer ($2,395), which features real-time MIDI parameter control, reverb, and delay effects.

DigiTech announced production of the DSP-128 ($399.95), a 16-bit, multi-effect digital signal processor offering reverb, chorusing, flanging, and delay. The DSP-128 can produce three of these effects simultaneously. Also available are the DSP-64 ($499.95),

Chick Corea: Inside The Creative Process

Keyboard Workshop: Methods of Composition, Improvisation & Practice offers invaluable insights from one of today's leading composers and musicians. Chick Corea demonstrates and explains key aspects of his artistry: development of pianistic skills, techniques of improvisation, and elements of composition.

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Players from beginner to professional will want to study *Keyboard Workshop* again and again to deepen their understanding of music. This 60 minute tape features vivid camera work and hifi stereo sound.

The material covered includes Bach's *Goldberg Variations #1*, Ellington's *Mood Indigo* and Gershwin's *Easy To Love* along with Corea's *Yellow Nimbus*, *Children's Song #16*, *Spain* and others. An extensive booklet of transcriptions is included.

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NEWS FROM SOUTHWORTH

Simpty, Vitsy, or Emm Tee See

No matter whether you use a Macintosh, Atari, IBM PC or hardware sequencer, there's a JamBox™ for your MIDI synchronization needs. All Southworth JamBoxes read and generate SMPTE time code, send MIDI Time Code, and provide a tempo map for microsecond accuracy.

SMPTE Time Code is a synchronization standard adopted by the Society of Motion Picture and Television Engineers and the European Broadcasting Union (EBU). It was originally developed for video editing and is based on video or film frames as the basic unit of time measurement. Unlike FSK sync, with SMPTE you can position anywhere on the tape and read out the absolute time position accurate to within half a millisecond.

SMPTE time is specified in hours, minutes, seconds frames and bits. The number of frames in each second depends on the SMPTE "format" and may be either 24, 25, 30 or drop-frame (29.97). In the United States, 30 frames is the most commonly used format for audio and video. In Europe it is 25 frames. Film runs at 24 frames per second. Drop frame is a special format for color television in which the last two frames of each minute are "dropped" except on even multiples of ten minutes. Each SMPTE "bit" represents the actual resolution of the time code and is one eightieth of a frame. In actual practice it is more common to edit by hundredths of a frame.

To use SMPTE, you prerecord the SMPTE signal on a track of your audio tape. This is called striping the tape. You can then position anywhere on the tape and read out the SMPTE position while recording on another track. To stripe the tape with SMPTE as an audio signal and read the prerecorded position you can use either a Southworth JamBox/4 or JamBox/2. This form of SMPTE is called "longitudinal time code".

An additional form of SMPTE is "vertical interval time code" (pronounced vitsy). This is a video only format in which the time code is stored in the video on each frame. The advantage of VITC is the ability to read back the position while the video tape is stationary. The Southworth Video JamBox reads and writes VITC as well as audio SMPTE and also can superimpose the SMPTE time over a video signal.

VITC lets you lock to video frames one at a time.

SMPTE provides an absolute time reference. This must be converted into beats to control a sequencer. The JamBox can record the position of the beats from an external drum machine, sequencer, or live performer. This "tempo map" can be used to synchronize any sequencer capable of accepting MIDI Song Pointer and an external clock. Some sequencers such as Southworth MidiPaint™, and Mark of the Unicorn's Performer 2.0™, are capable of interpreting the SMPTE time directly for a much tighter lockup (SMPTE Direct Lock™). Other programs, such as Q-Sheet™ and Cue™, require MIDI Time Code, which encodes the SMPTE time as a message protocol within MIDI.

New JamBoxes

The JamBox/2 provides the Atari, IBM or hardware sequencer user with two-cable merging and all the JamBox/4 synchronization features, such as sync-to-click for locking to a click track or live performer, and full support of MIDI Time Code (MTC) and SMPTE Direct Lock. The JamBox/2 can save its tempo map directly to tape on the same track as the SMPTE stripe. In addition, the JamBox/2 provides push buttons for transparent operation with most sequencers. Push buttons let you adjust the SMPTE offset with hundredth frame precision while your sequencer and tape are playing.

The Video JamBox is a 19" rack-mount version of the JamBox/2 which also reads and writes vertical time code and provides a genlock frame and status display. Besides the convenience of seeing your frame numbers and metronome superimposed over your video and being able to read frames while the tape is stopped or jogged frame by frame, the Video JamBox is a must if your video tape is pre-striped with VITC, or you need to generate vertical time code.

One-Step™ Beyond

Southworth's newest sequencer, One-Step, brings a new level of operating simplicity to MIDI sequencing on the Apple Macintosh. The concept of One-Step is total graphic control of your MIDI editing. The MacPaint style editing pioneered in Total Music and MidiPaint has been extended far beyond anything available on any other sequencer.

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One-Step provides full color support for the Macintosh II and allows you to graphically edit multiple tracks simultaneously in different colors.

Full support of MIDI Files lets you transfer your sequences to and from other Macintosh music programs for specialized sequencing and notation. You can also use One-Step sequences directly from MidiPaint and Southworth's MidiStack™ for playing sequences from within HyperCard™.

For more information or the name of a dealer near you:

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Meanwhile, **DOD Electronics** introduced the FX-67 Stereo Turbo Chorus ($139.95), the FX-87 Psychoacoustic Signal Processor ($79.95), and the 225 master switch accessory ($59.95), an A/B switching device.

The guys at **Applied Research & Technology**, otherwise known as ART, were showing off the IEQ programmable equalizers ($795 for 1/3-octave controller, $550 for 1/3-octave satellite, $595 for 2/3-octave controller, and $395 for 2/3-octave satellite), along with the IEQ video monitor ($349), a nine-inch diagonal black-and-white rack-mounted video monitor. Several new versions of ART's digital reverb unit were introduced. The MultiVerb ($449), as you might expect, provides multiple effects and will be available in Apr. '88. The ProVerb II ($349), available in Feb. '88, offers 200 preset programs with two effects available simultaneously. ART also lowered the price of the ProVerb to $299. Finally, there was the PD3 Digital Delay ($749), with three separate outputs featuring independent delay times.

Stewart Electronics showed their new HDA-4 ($279) four-channel headphone distribution amplifier, featuring separate one-watt stereo outputs, master and independent level controls, and a stereo/mono switch.

Three graphic equalizers (Models GQ-15, GQ-31, and GQ-62), a parametric equalizer (Model PQ-4), and a six-out headphone/monitor amplifier (Model HA-6) were displayed at the **Furman Sound** booth. (Prices not available.)

From those wizzes at **Electro-Voice** come a new series of BK-32 stereo mixing consoles of 12-, 16-, and 24-channel models. The 16-channel model lists for $1,498; prices for the other models weren't available. EV also has a new 200-watt stereo power amplifier, the Model 7300 ($758).

JBL was also attracting interest with its 2450J, a newly designed speaker driver, and the Control 5 Monitor (prices not available). In the same booth, **Urei** showed their new 7110 Limiter/Compressor ($450), and **Soundcraft** displayed three new products. The Soundcraft 6000 Console is a multi-track mixer (price not available). The Twister ($1,750) is a MIDI automation mixing system. Soundcraft's TS12 (price not available) features 32 tracks of automated mixing.

Stands, Services, and Miscellaneous

Ultimate Support Systems announced the availability of their APEX Column ($124.99) in three new colors: ultra-marine blue, crimson red, and iridescent gold.

Invisible Products was on hand to display their entire line of stands. Their new computer/keyboard workstation ($199) looked *trés* cool.

In a move to extend options for the drummer, **Modus Novus** introduced a new system of drum controllers and stands. The system's drum pads are larger and offer more response than previous drum controller pads. The drum stand is adjustable for many configurations, and a wide variety of color schemes are available. Initial price for the Modus Novus drum system is $2,500.

Columbia Pictures Publications announced Gigpaks, a new approach to the performer's fake book. Printed on three-hole-punched, 8½" x 11" loose-leaf paper and featuring melody, lyrics, and chord symbols, Gigpaks are currently available in three packages: Standards, Standard Ballads, and Contemporary Ballads. Price for each package is $10.95.

Julian Systems introduced the Rack II ($4,995), a Macintosh II remounted in a heavy-duty rack-mount casing and featuring enhanced RFI/EMI shielding, dual 5.25-inch internal hard disks, and a remote video and desktop bus. Julian Systems also displayed the NTSC Converter ($599), a connection box for Macintosh II with Apple or SuperMac video interface card to NTSC video.

Touchbase Systems introduced WorldPort 1200 ($199, with free PAN membership), a 1,200 baud modem compatible with the Apple II series, Macintosh, IBM, and most other computers.

Great stuff, huh? But none of us can afford all the new goodies that we might like to have, so before you grab Mom's checkbook and dash off to your favorite music store, take the time to evaluate and prioritize your musical needs. Remember: If it still works, it's not obsolete. There's no such thing as an obsolete instrument, there's just technology that's been around for a while. As always, the most important thing is the music, not the hardware you use to make it. But is sure is nice to salivate once in a while, isn't it? ■

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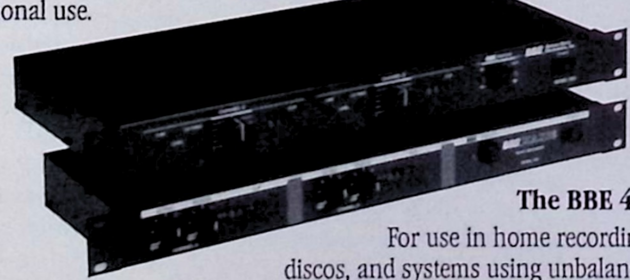

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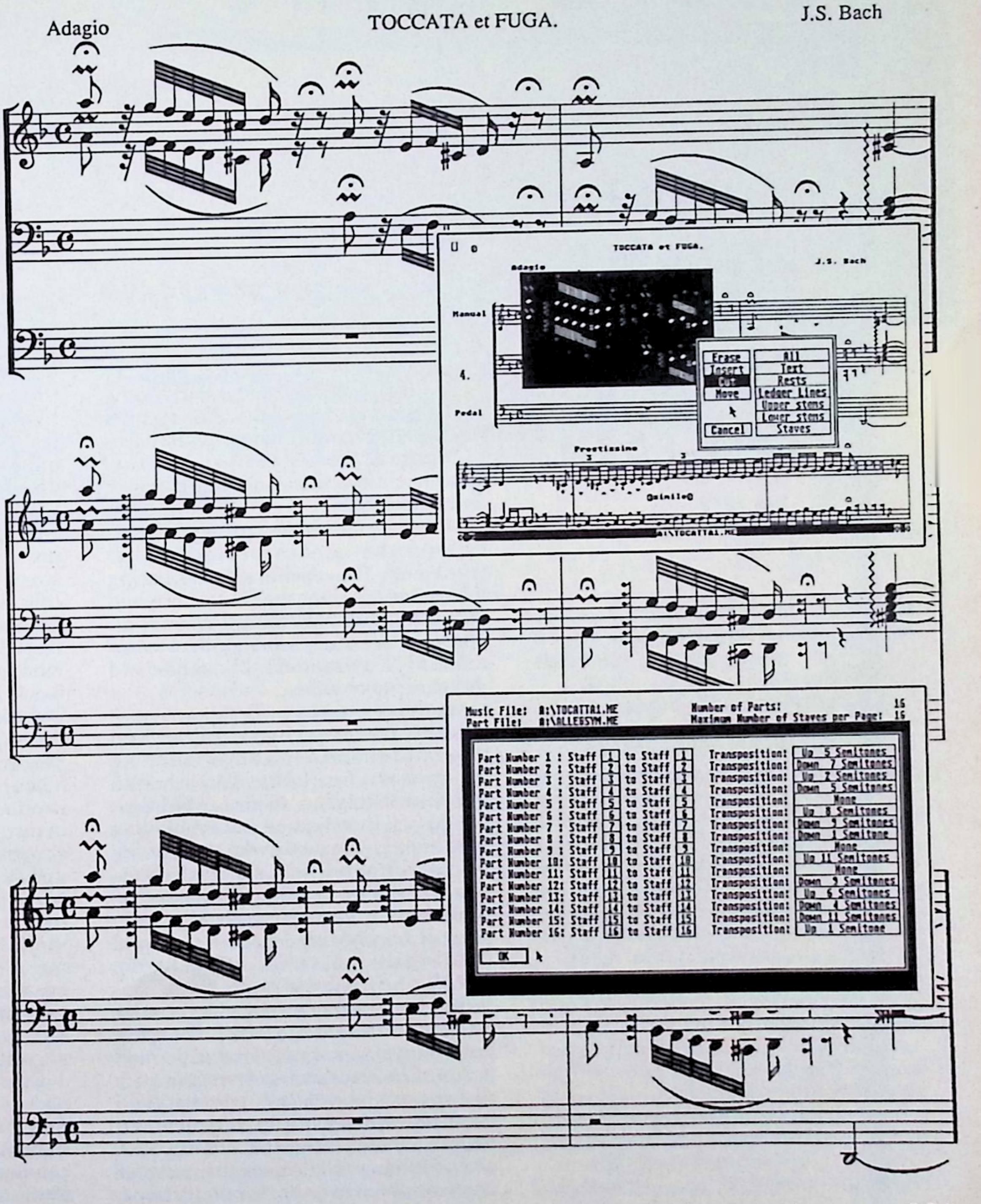

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Music File:  A:\TOCATTA1.ME                    Number of Parts:                    16
Part File:   A:\ALLEGSYM.ME                    Maximum Number of Staves per Page:  16

Part Number 1 : Staff [1]  to Staff [1]    Transposition: [Up   5 Semitones ]
Part Number 2 : Staff [2]  to Staff [2]    Transposition: [Down  7 Semitones]
Part Number 3 : Staff [3]  to Staff [3]    Transposition: [Up   2 Semitones ]
Part Number 4 : Staff [4]  to Staff [4]    Transposition: [Down  5 Semitones]
Part Number 5 : Staff [5]  to Staff [5]    Transposition: [      None       ]
Part Number 6 : Staff [6]  to Staff [6]    Transposition: [Up   8 Semitones ]
Part Number 7 : Staff [7]  to Staff [7]    Transposition: [Down  9 Semitones]
Part Number 8 : Staff [8]  to Staff [8]    Transposition: [Down  1 Semitone ]
Part Number 9 : Staff [9]  to Staff [9]    Transposition: [      None       ]
Part Number 10: Staff [10] to Staff [10]   Transposition: [Up 11 Semitones  ]
Part Number 11: Staff [11] to Staff [11]   Transposition: [      None       ]
Part Number 12: Staff [12] to Staff [12]   Transposition: [Down  9 Semitones]
Part Number 13: Staff [13] to Staff [13]   Transposition: [Up   6 Semitones ]
Part Number 14: Staff [14] to Staff [14]   Transposition: [Down  4 Semitones]
Part Number 15: Staff [15] to Staff [15]   Transposition: [Down 11 Semitones]
Part Number 16: Staff [16] to Staff [16]   Transposition: [Up   1 Semitone  ]

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STEVE KUHN

ON PLAYING STANDARDS AND THE DEATH OF FREE-FORM JAZZ

BY BOB DOERSCHUK

SOMETIMES IT'S HARD TO PICK them out, but they're there. Amidst the dazzle of showbiz hoopla, the cries and groans of legends being born and extinguished, the trample of customers rushing from album to . . . sorry, CD to CD, they work slowly, steadily, crafting their work with patience and sensitivity.

These are the low-key artists, whose life cycles can be traced over decades rather than weeks. They exist in all styles, pacing themselves for a long spell of creativity and self-exploration. As a result, their music is often more carefully seasoned than that of their more sensational colleagues, and therefore more subtle.

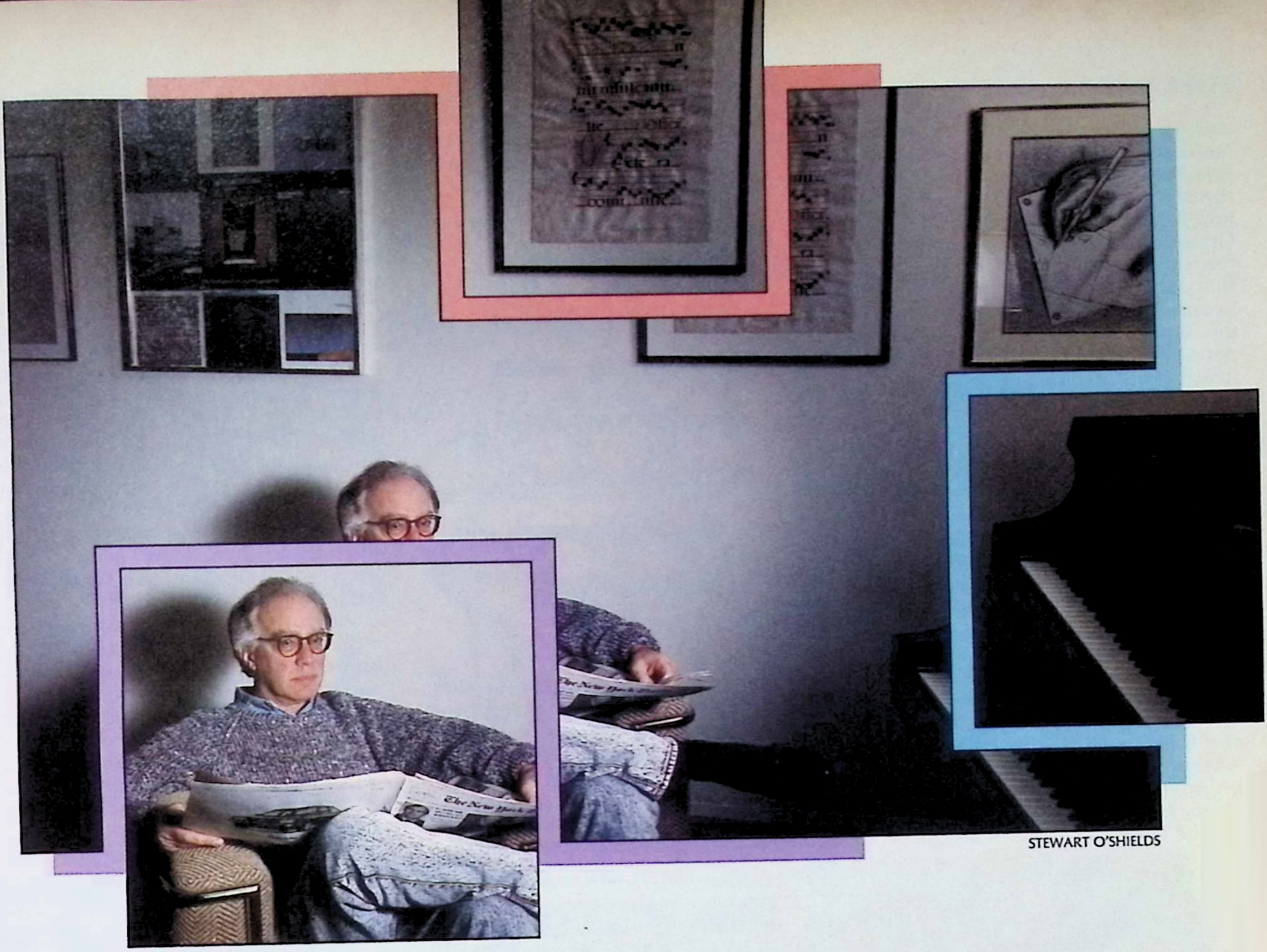
In the teeming world of jazz piano, Steve Kuhn is one such artist. He has been around the block a few times, stopping along the way for a fusion dabble here, a free-form indulgence there. But he's travelled at a leisurely pace, always making sure he knows exactly what he's doing before moving on. And, since his last *Keyboard* interview in March '79, he's come back home, back to the basics.

For Kuhn, *Mostly Ballads* [New World (701 Seventh Ave., New York, NY 10036), NW 351], his latest solo piano album, captures where he began, as well as how far he's gone on his journey back home. Long known as a player of great imagination and technical power, Kuhn takes an introspective approach on *Ballads*, treating even tired old tunes with intelligence and respect. Where younger pianists may look on classic tunes as little more than a cinder track on which to unlimber their chops, Kuhn has learned to take the great songs more reflectively, one change at a time.

"It actually started when I had the quartet with Sheila Jordan," Kuhn explains. "She was singing some standards, and that re-awakened my interest. I hadn't played these tunes in quite a while. I grew up with this music, but basically I was concentrating on originals up until recently. In fact, I really tended to suppress this enjoyment for a long time. But now I've decided to go back and re-examine the tunes I used to enjoy playing."

That was the mood of the *Ballads* session, as Kuhn recalls it: thoughtful, exploratory, yet full of delight, much as an art collector might feel when turned loose in a roomful of forgotten masterpieces. Kuhn went in with no preconceived arrangements, and only a general idea of what he would play. "As a matter of fact," he notes, "for a few of them—'Tennessee Waltz' and 'Danny Boy,' perhaps 'How High The Moon' and 'Lover Man,' and I guess ''Round Midnight'—Bob Hurwitz, the producer, came into the studio from the control room and said, 'Listen, why don't you just think about songs that you grew up with, that maybe you wanted to play at some point and never did. Maybe you once thought they were a little corny, or they'd been over-recorded. But play them now, because you've always enjoyed playing them. Just sit down and play as if you were in your living room.' Which is what I did. That was the premise for maybe half the album."

After years of performing other people's material with such artists as trumpeter Art Farmer and saxophonists John Coltrane and Stan Getz, or featuring original compositions with his own groups, Kuhn finds that standards demand a different approach to improvisation, particularly when doing a live gig. "If the song is very familiar to the audience, I'll probably take more liberties with, let's say, the melody in



STEWART O'SHIELDS

the initial statement, or with the whole tune in general," he explains, "because I know the song gives them a frame of reference. When I'm doing an original tune that they might not know, I try to state the theme as basically as it's written, then go from there in such a way that I can create some kind of a hook in the improvisation that they can grab onto."

Kuhn's rediscovery of the standard repertoire also ties in with his latest group project, a trio featuring Ron Carter on bass and Al Foster on drums. On their debut album, *Life's Magic* [BlackHawk, BKH 52201], they dug deep into their songbag and came up with such material as Fats Waller's "Jitterbug Waltz." "I think the standard thing really awoke for me when I started working with the trio," Kuhn says. "We were doing, I'd say, 60 to 70 percent other people's songs, what I'd call standards, and 30 percent originals. It seems nice to mix things up that way. Besides, I like the way songs like 'Jitterbug Waltz' are constructed. I like the way the harmony lends itself to improvising. It came out great because of the nature of the trio, which works on the premise that we're all conversing with one another through music."

Though he enjoyed doing *Ballads*, Kuhn confesses that he prefers playing with the trio to playing solo. "I like that environment best of all," he says. "For one thing, I can do solo and duo playing within the trio. And I love playing with Ron and Al. Years ago, I made a wish list and said, 'Where would I like to work, and who would I like to have in a trio?' Ron and Al were at the top of the list. I like to turn ideas upside down and stretch them over bar lines, and so do Ron and Al. So I decided to pursue that. And the Village Vanguard in New York was my first choice of where to play, for many reasons. It turns out that's where we first worked together."

Carter is the latest in a long line of extraordinary bassists who have worked with Kuhn over the past 25 years. The experience has left a mark on Kuhn's style, particularly with respect to chord voicings. "I remember when I started playing with Scotty [LaFaro]," he says. "He told me, 'Don't play the roots in your left hand, because I'm going to play them.' That made it possible for me to revoice the left-hand chord. To this day, I very rarely play any roots, because generally the bass player does that. I don't even think about them. That gives you a rich harmonic sound. I mean, sometimes it's fine to double what the bass player is doing for an effect. But basically, it's silly.

"Working with bass players also helped make me aware of playing in sharp keys," Kuhn continues, "because of the open strings for the bass and the natural harmonic overtone series that produces. Playing in sharp keys, especially in keys like *G*, *D*, *A*, and *E*, gives you a much richer acoustic sound than playing in the flat keys. When you do ballads in those keys, if you're playing with a bassist who has a good sound and knows what he's doing, you can really hear the difference."

Kuhn, of course, is not alone in rediscovering the joys of playing standards. A trend of sorts seems to be underway, from lounges to clubs to concert halls, in which such formerly free players as Keith Jarrett and Paul Bley are resurrecting the classic tunes of an earlier era. Kuhn went through a free-form period as well, but pulled out of it earlier, and more decisively, than some of his contemporaries. "I just got tired of it," he says. "In any case, there is no such thing as completely free playing, unless you sit an elephant at the piano and let him hit the keys with his trunk. With me, at least, there was always some kind of structure. There had to be something for me to latch onto. Always, in my improvisation, there was a hook, whether it was a rhythmic thing or a melodic idea—something I could use as a frame of reference. Otherwise, it was meaningless. Besides, I really prefer to play in a more structured form, harmonically and rhythmically, because there's so much you can do with that. Especially when you're playing with people the calibre of Al and Ron, or [bassist] Eddie Gomez, people who have gone through it and know the roots and the history of the music."

Though doomsayers occasionally forecast the imminent end of jazz and creative improvisation in general, Kuhn speaks optimistically about the future of the music he loves. "There's much more of an awareness now of the history of the music than there was, say, ten years ago," he points out. "Back then, people would come to study with me, and I'd realize they didn't even know who John Coltrane was, or Charlie Parker. But now there's a renaissance going on. It's reflected in the new interest in this music from its beginning, and that's healthy. You *have* to know where it all came from. Otherwise, your improvisations are transparent, completely lacking in substance."

The reason for this renaissance? "I think it happened because the other stuff [free-form music] wasn't working," Kuhn suggests. "It became apparent that there had to be something else, not just to the people who were doing it, but to the audience. The musicians had to look deeper and see why nothing was happening, why this music was not getting through. By looking deeper, they realized that they had to go back, look at the history, and see where this all came from."

'There is no such thing as completely free playing, unless you sit an elephant at the piano and let him hit the keys with his trunk.'

For the young player in search of a foundation for his own musical explorations, Kuhn prescribes a long walk through the pages of the nearest collection of standards. "When I was a kid, I had the original fake book," he says. "A thousand tunes. I used to go through it page by page, and play each one. Consequently, I developed a large repertoire of standards, which I've used in commercial work and with bands. Of course, a lot of the songs weren't particularly good as vehicles for improvisation, but there were some gems along the way, for sure. To this day, when new fake books come out, I look through them. There's a wealth of knowledge for kids in these books. Just be aware of the way the tunes are harmonized. Unless you've got the *Real Book*, in which they've taken some pains to get the harmonies right, you've got to be careful about that. Much of what you'll see is pretty naive. But if you already have a knowledge of harmony, you'll automatically see what to play, rather than what's written."

The future for Kuhn includes more jobs with the trio—he's scheduled to perform with them, and in some solo settings, in Seattle, Portland, and San Francisco in April and May—as well as another trio album and, with luck, his current wish list topper, a recording for piano and strings. As to how much room this master improviser would leave himself for stretching out and soloing, Kuhn laughs. "Let's just say, not enough to hang myself."

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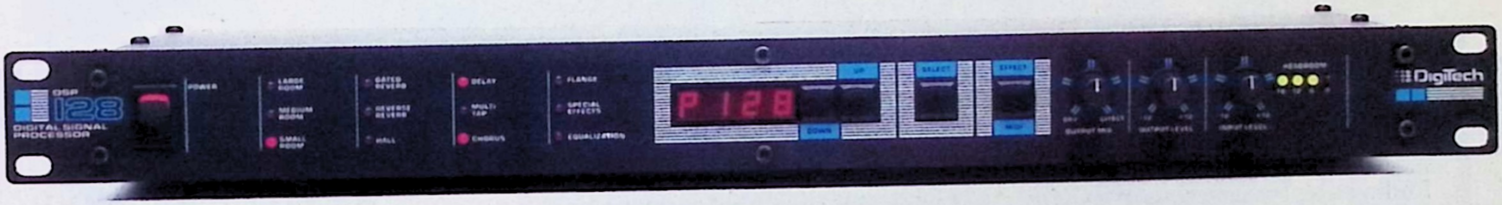
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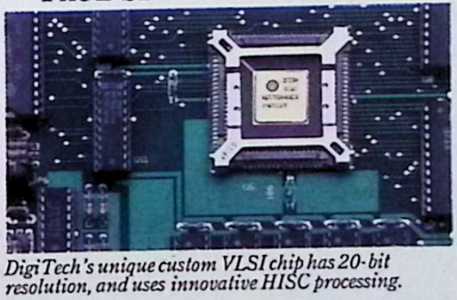

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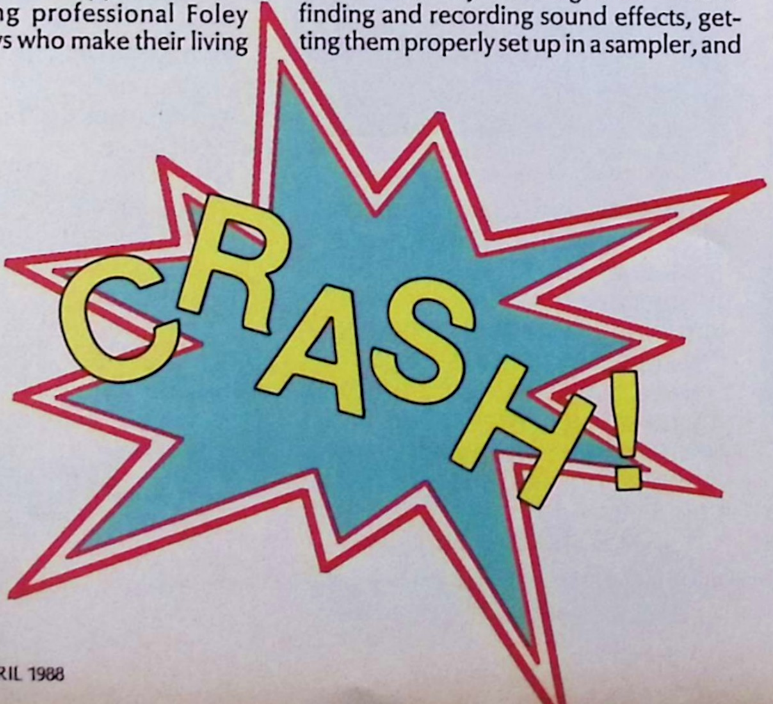
KEYBOARD

SAMPLING YOUR OWN SOUND EFFECTS FOR FILM & VIDEO PRODUCTION

BY CHRIS MEYER

LIKE A LITTLE BROTHER WHO FINDS something of yours under a dresser and wins the science fair contest with it, a few enterprising players have been finding uses for sampling keyboards that go beyond recreating the London Philharmonic, Phil Collins' drum sound, and (gasp) the ultimate blown bottle/shakuhachi. Electronic Foley work—*i.e.*, laying sound effects into movies—is one application that samplers are perfectly suited for. But it's also an application that people, including professional Foley operators (the guys who make their living doing sound effects for film and television), often overlook or are just plain hesitant to try. Perhaps it's because samplers have been typecast as musical instruments, or perhaps it's because new technologies always meet with some resistance (old ways die hard). Regardless of the reason, the field of sound effects design is ripe with opportunity for those of us who own samplers.

In this sampling clinic, we'll look into a few of the many challenges involved in finding and recording sound effects, getting them properly set up in a sampler, and recording them in sync with a moving picture.



FINDING & CREATING SOUND EFFECTS

IF YOUR EARS PERK UP WHENEVER you hear an unusual sound, you've taken the first step toward becoming a sound effects designer. The second step requires that you start asking yourself how *you* can make unusual and convincing sound effects out of ordinary noises.

Obvious sounds can be made in obvious ways. Need a car starting? Go record your car. Need the sound of a door latch being opened? Set up a mike in front of a door latch and get the sound on tape. Babbling brook? Take a field trip—or try to recreate a brook babbling by pouring water over some rocks. I once had to do a sound effects cue for a drunkard banging his head against a wall. I found a rickety garage (it was the softest wall I could find) and hit my head against it. Unfortunately, I left the drunk part out, which was a mistake because the wall didn't turn out to be that soft. I created an avalanche by rolling rocks down hill at a mike. (I only hit it once.)

Some sounds aren't exactly practical to recreate. Nuclear explosions and car crashes spring immediately to mind. For

CLINIC #11

BETTMANN NEWSPHOTOS

these, close your eyes, click your heels three times, and think about what's really making the sound you're hearing. For car crashes, it's a lot of metal slamming into metal, rattling noises, and breaking glass. Sacrificing a couple of garbage cans works nicely for this effect. Slam them together holding firmly onto them a couple of times for the solid part. Drop and rattle them mercilessly for the car doors falling off and such. Glass that's already broken sounds much more realistic than actually breaking it. Break a pane once, and rattle the shards around in a wooden box.

Other sounds can't be recreated because they're imaginary events. Ever hear the sound of the sky ripping open to unveil a fourth dimension? Ripping cloth played an octave or so lower than the pitch it was sampled made a fairly convincing ripping sky noise for me. When you're confronted with such non-existent sounds, open your mind and let whatever visuals you have to work with suggest the sound. Then keep you eyes and ears peeled for anything that might make such a noise. Need a mechanical foot clanking? Try recording some tools banging around in a metal tool box. Is it a BIG mechanical foot? Layer your tools clanking with a really thunderous kick drum hit to add size and weight to the footsteps of doom.

PRE-RECORDED SOUND EFFECTS LIBRARIES

EVEN BEFORE CDS WITH MUSICAL INstrument samples started to appear, sound effects CDs were on the scene. These range from individual disks (Phillips, etc.) to very comprehensive sets (Sound Ideas). With most of them, you pay one fee and are allowed to use whatever you please. All tend to have fabulous sound quality, and are in stereo. But be warned that many "sound spectacular" demo CDs are copyrighted, and should not be used.

There's always the old fallback of sound effects records. Elektra had a wonderful set that also had a pretty liberal licensing agreement printed on the back. Fidelity isn't quite as hot (and clicks and pops are no fun), but a bit of cleaning, EQ, and judicious trimming will make them more serviceable.

Sound effects disks for samplers are not uncommon, and Optical Media's CD-ROMs tend to be about 1/3 sound effects. They have also announced a CD-ROM of sound effects saved only in Sound Designer format (which is used by almost all sample editing software packages).

Like prepackaged synth patches, prerecorded sound effects tend to get overused. It probably won't matter whether your door-slamming sound is identical to someone else's. But if your dinosaur roars don't have anything to set them apart, if your atom bombs sound like somebody else's hand grenades, if your robot noises sound like R2-D2, you'll get known for being an uncreative sound effects designer. For that reason, I still prefer to

Continued

Chris Meyer was instrumental in the design of Sequential's Studio-440 and Prophet 2000 samplers. He has also worked for Digidesign and recently produced a set of children's recordings for which he also provided sound effects.

record my own sound effects.

SAMPLING YOUR OWN

FOR THOSE NOISES THAT YOU CAN'T recreate safely within the confines of your home studio, a good portable cassette recorder—say a Sony Walkman Pro or equivalent—is essential. Those of you on bigger budgets go for a Nagra open-reel recorder (some claim Nagras can survive being thrown off cliffs) or a PCM recorder with battery pack and portable VCR.

My mike choices are a bit different than they would be if I were recording instruments—a rugged dynamic (like a Shure SM-57) that I don't mind getting buried under a rockslide and a few PZM's for their high detail and wide pickup pattern. A really high-quality condenser mike for critical recordings and more controlled environments should be on your birthday present list. Contact mikes and one of those little stereo mikes sold for cassette recorders (that can be fit between railroad tracks without the conductor noticing) are also nice toys to have around. But if you're like most of us—on a tight budget and thinking the only way to record raw sound effects is to have a ton of gear—keep in mind that these are only ideal world suggestions. The only necessity is that you have some kind of recorder and some kind of mike, and a sampler to dump your recordings into. In fact, the creative solutions brought on by budgetary constraints often produce unique and wonderful sound effects.

I recommend that you close-mike everything, since incidental noises and local ambiences are unwanted entities. Record everything as flat as possible to begin with. Resign yourself to the fact that everything will need EQ later. And record multiple takes—sound effects are far less consistent in repeatability than most musical instruments' sounds. Get a lot of variations now, and buy repeatability back later with your sampler. But don't rule out variations. What two windows breaking sound alike?

SAMPLER SETUP

SOME OF THE SAME RULES THAT apply for sampling instruments also apply for sound effects, such as recording as hot as possible without clipping. Others are subtly different. Use minimal EQ when going from raw tapes to sampler—rely on massive EQ later to tailor the sound. Long sounds are perhaps even more important with sound effects, since most of the time you won't be looping them. Don't be afraid to chew up an entire disk with just one or two sounds. A sound effects dubbing session isn't going to be like an onstage situation where you're changing disks live between songs, although you may run into trouble if you have to create a number of effects in quick succession. If that's the case, you'll have to either use a multitrack recorder or own more than one sampler.

Trim sounds as carefully as you would instruments. Transpose the sound down as far as it will go on the keyboard while trimming the start; dead spaces will be most obvious down here. But be careful not to hack some subtle aural clue off of the start of the sound—not all sound effects begin abruptly, and the ear can tell when something is missing. Since you probably won't

WHERE TO LOOK FOR WORK

BELIEVE IT OR NOT, THERE ARE A lot of places to make money doing sound effects. The competition is pretty stiff in A/V post-production studios in Hollywood, but more and more local calls for sound effects work are popping up. Here's a list of possibilities:

- **Local cable television.** Productions might range from commercials to local specials.
- **Local TV stations** (network and independent). These are regularly looking for ways to make their home-grown productions more professional.
- **Music recording studios.** These folks are often picking up some post production work for commercials by local companies to supplement their income, and they may not have a sound effects specialist yet.
- **Radio stations.** Don't ignore radio commercials. Radio stations spend money to have local voice-over work done; sound effects can't be far behind.
- **A/V production studios.** Such studios may work with their own stable of people or may have producers who come to them with a sound effects designer already on staff. But it can't hurt to let anybody and everybody who might give you a job know that you exist.
- **College film departments.** If you're insecure about your chops, try contacting the film department of a local college. And don't ignore spicing up that drab pop tune you just engineered and produced.

A LITTLE BACKGROUND

BACK IN THE OLD DAYS (UP TO THE mid-'70s), the plop-plop-fizz-fizzes in commercials, films, and videos were either recorded live on the set, replicated later by somebody making a similar sound while watching the picture, or dubbed later by synchronizing a prerecorded sound effect with the picture. Since recording the sound during a film shot often gets a much lower priority than getting the visual right, dubbing sound effects and sometimes even the speech becomes a necessity. Recreating these sound effects—from footsteps to thunderstorms—is referred to as Foley work (in England, Footsteps).

Anyone who has seen stills from the Orson Welles' production of *War Of The Worlds* remembers how sound effects were done in the days of radio. Coconuts banging together made horses hooves, a jar being opened in a reverberant toilet made a spaceship door unscrewing. Later, entire sound effects libraries were recorded on tape (first reel-to-reel and later 8-track cartridges).

THE BETTMANN ARCHIVES

Cyborg lunatics from Mars? No, they're early radio soundmen, armed with pistol, gong, and lip microphone, poised to deliver the best sound effects 1920s technology could buy.

Synthesizers started being recruited to help out about a decade ago (*Star Trek I* and *Apocalypse Now* being landmarks). Today, samplers are becoming more and more prevalent due to their realism and ease of use. Samplers have several advantages over tape: Sounds are easier to archive, easier to synchronize, and easier to manipulate.

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be looping, make sure the sample doesn't end with a thump—you may be playing it all the way out.

Of course, take advantage of routing velocity to loudness—perhaps in the extreme. You'll be doing a lot of 'performing' of the sample later to get different levels. Velocity routed to the filter tends to sound a little hokey for sound effects. I normally use the filter only to get rid of tape hiss or to mask clock noise when transposing downward. You can always close the filter down later when you actually use the effect if the cue calls for it.

Since sound effects tend not to have loops, I envelope them the way I would a percussion instrument sound. The basic envelope is just like that for a tom-tom, with a few extra tricks (mainly to combat background noise on the raw recording). Set the sustain level to off and the decay rate so that the amplifier just fades out when the sample does—this helps mask any background noise (along with normal quantization noise) that the effect might dissolve into. For real problem samples, envelope the filter to begin to shut down at the end too. Set up this way, hitting a key and holding it gives the full-length effect perfectly prepared. Augment this by setting the amplifier release to a fairly short value so you can cut the sound off on command, or so that a quick stroke gives an abbreviated version.

Just a touch of amplifier attack time helps round out the start of the sound and get around a thump or a sudden start in background noise. I'll occasionally use velocity routed to the amplifier's attack to articulate how "soft" or "hard" the sound is. A low velocity is used to fade up a thunder roll, while a quick velocity catches the full blast. This also works quite well for recreating someone stirring in the bushes—start with a sample of a fairly sudden movement, and perform the velocity and release phrasing to vary between slow and sudden movements.

17:26:35.17 RTC

Once the SMPTE time code is burned into a videotape, even a nervous breakdown or bad Devo impression can be nailed with sub-frame accuracy.

The few sounds you'll want to loop are ambience beds—that is, sounds that are constantly going in the background (birds, a crackling fire, a crowded party). Letting a loop be noticed here *ist verboten!* Make the loop as long as possible, engulfing half or all of memory. Try to avoid material that has an obvious single event, such as a branch cracking or one shrill bird (the ear will catch onto the repetition of this right away). Ambience beds with a static nature (crickets or fire) or silent periods, however short (birds or babbling brooks) will usually loop without any coercion whatsoever. Cross-fading a small portion will usually be enough to fix the rest. Backwards/forwards loops work nicely for waves and wind.

As with instruments, listen to your loops at different transpositions to make sure they stay transparent. Playing back an ambience bed by holding some non-consonant interval (avoid fifths and octaves) helps make loops less obvious, since it's quite some time before the pattern repeats. I've fooled many an ear this way. Also, pick out "chords" of a sound to shape the frequency response and weighting, using velocity to control the mix.

Mapping sounds on the keyboard is important. A typical formula is to set up the first preset for preview of all the sounds on the disk, with one sound per key. Set up other presets with only two or three samples, so they can be heard over their entire

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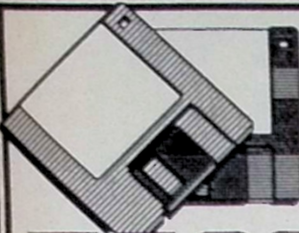

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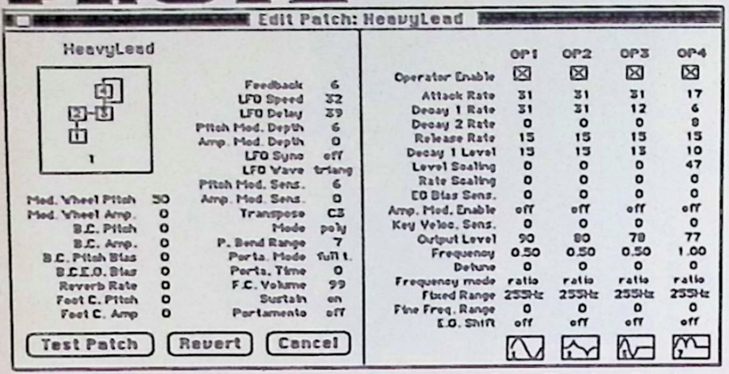

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Feedback	6
LFO Speed	32
LFO Delay	39
Pitch Mod. Depth	6
Amp. Mod. Depth	0
LFO Sync	off
LFO Wave	triang
Pitch Mod. Sens.	6
Amp. Mod. Sens.	0
Transpose	C3
Mode	poly
P. Bend Range	7
Porta. Mode	full t.
Porta. Time	0
F.C. Volume	99
Sustain	on
Portamento	off

Mod. Wheel Pitch	50
Mod. Wheel Amp.	0
B.C. Pitch	0
B.C. Amp.	0
B.C. Pitch Bias	0
B.C.E.G. Bias	0
Reverb Rate	0
Foot C. Pitch	0
Foot C. Amp	0

	OP1	OP2	OP3	OP4
Operator Enable	☒	☒	☒	☒
Attack Rate	31	31	31	17
Decay 1 Rate	31	31	12	6
Decay 2 Rate	0	0	0	8
Release Rate	15	15	15	15
Decay 1 Level	15	15	13	10
Level Scaling	0	0	0	47
Rate Scaling	0	0	0	0
EG Bias Sens.	0	0	0	0
Amp. Mod. Enable	off	off	off	off
Key Veloc. Sens.	0	0	0	0
Output Level	90	80	78	77
Frequency	0.50	0.50	0.50	1.00
Detune	0	0	0	0
Frequency mode	ratio	ratio	ratio	ratio
Fixed Range	255Hz	255Hz	255Hz	255Hz
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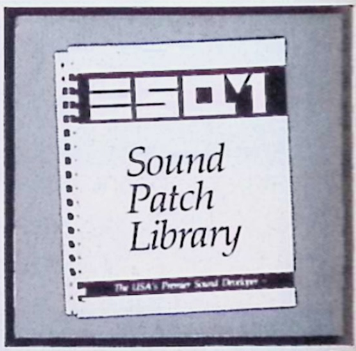

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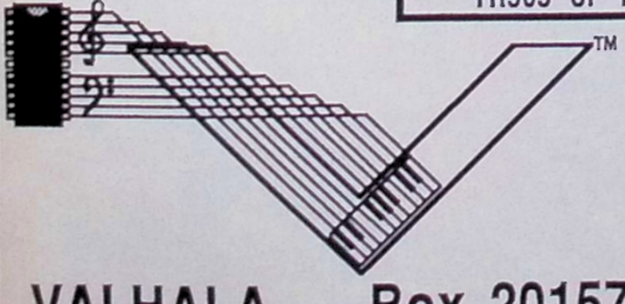

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transposition range. I prefer to figure out how far a sound transposes safely (hopefully some nice division of an octave), and set up all similar sounds in a single preset with these ranges. This way, I can perform a variety of similar sounds live against video without worrying about hitting a bad key (*i.e.* a parrot transposed down so far that it turns into a bullfrog).

Another approach is to build up a preset or disk that contains sounds that make up a composite effect. For example, build a disk with the parts of our car crash on it. Another good example: a door-opening disk that contains each event as a separate sample: turning the handle, opening the door, walking through it, and slamming it behind you. This allows you to customize the timing of each part of the whole event, syncing them to what's happening on screen if need be. For composite effects that can't be this premeditated, I keep a template disk around of a preset with several samples closely spaced on the keyboard, and load as single samples the sounds I need. If anything, you'll have less time in a sound effects session than a musical one, so anything that will speed up your performance helps.

A few other sundry tricks that I've used include layering samples (and samplers) for thickness, slapping several adjacent keys to make a single sample sound bigger (big door slams and the like), and performing a couple of different samples to tape (such as sheep bleats or raucous bird screams) to resample and loop them later as an ambience bed. Don't be afraid to beef up samples with synth noises too. This stuff is fun and anything goes, so experiment!

GETTING YOUR SOUNDS IN SYNC WITH A MOTION PICTURE

ONCE YOU'VE GOT ALL THESE pieces of aural tomfoolery arranged in some semblance of order, your next job—the real job—is to record them so that each sound effect lines up in sync with a moving picture. The entire process of syncing to picture, whether it be film, videotape, or slide show, can get pretty equipment-intensive. You absolutely have to have access to a multi-track recorder and a VCR (or projector) whose transports can be run in sync with each other. Tascam, Fostex, and Otari all make home-oriented multi-tracks with this capability, so do many VCR manufacturers (notably Panasonic and Sony). An alternative to spending buckets of bucks here is utilizing an A/V post-production studio to handle all the machine-to-machine (tape recorder to videotape or film projector) syncing.

I also recommend that you develop a working knowledge of syncing with SMPTE time code. But we won't go into the mechanics of synchronization here (we don't have space). For more details, see *Keyboard*'s June '86 Special Issue on Home Recording, Bobby Nathan's columns on syncing from Jan. '85, Feb. '85, and Sept. '85, and Jim Cooper's July '86 column. What we will talk about are the considerations of performing a sound effects cue in time with picture. If you're familiar with syncing drum machines and sequencers, the ideas here won't be all that foreign.

The main difference is that you're not synchronzing to a piece of music—you're synchronizing to pictures referenced against a film footage (usually displayed as a SMPTE time code), with no relation to any tempo, bar, or beat. Assuming you're working with a videotape (the only sane way to work these days), you'll use slow-motion and freeze-frame functions to crawl through the video and spot the point where the effect (a flash of lightning, a rabbit getting hit on the head) is supposed to occur. That point, which will be shown in hours, minutes, seconds, and tenths of frames on the TV screen, is the beat you're trying to hit.

Some sounds, such as ambience beds, won't have to hit any beat at all. They can simply run with appropriate fade-ins and -outs. However, specific physical actions that require sounds require synchronization. Just going in and thrashing away isn't going to be enough; the eye and ear talk to each other rather well and don't like to be fooled. You're going to have to sync events as closely as possible.

Continued

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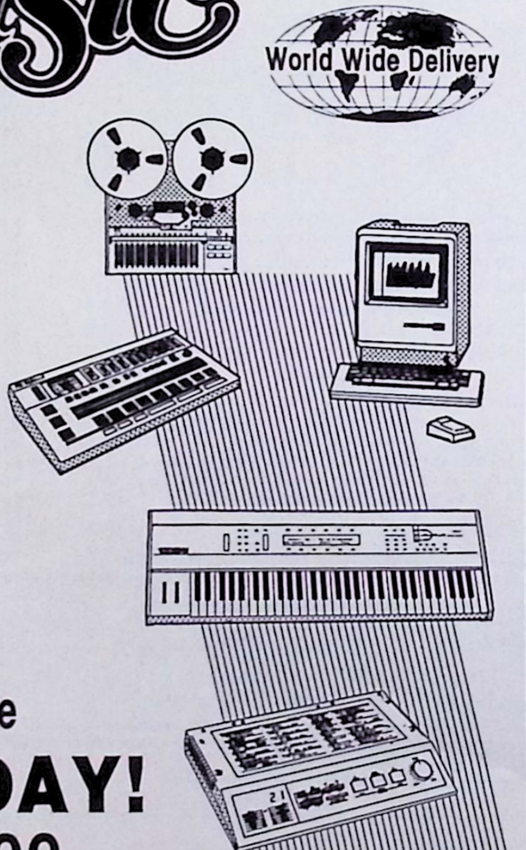
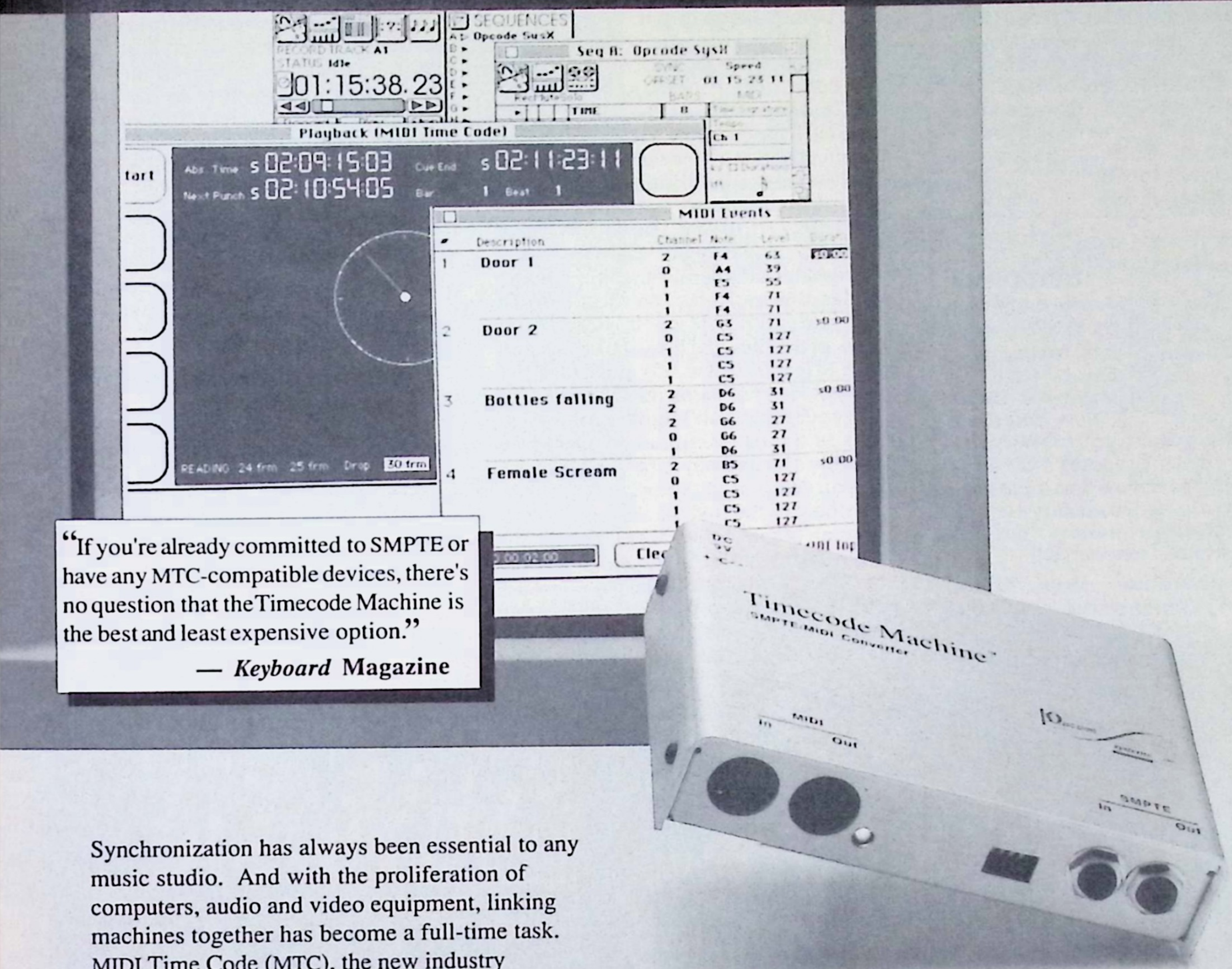


Timing is Everything.


SEQUENCES
Opcode SysX
RECORD TRACK A1
STATUS Idle
01:15:38.23
Seq A: Opcode SysX
SYNC OFFSET 01 15 23 11
Speed
TIME
Ch 1
Playback (MIDI Time Code)
tart
Abs. Time s 02:09:15:03
Cue End s 02:11:23:11
Next Punch s 02:10:54:05
Bar 1 Beat 1
READING 24 frm 25 frm Drop 30 frm
MIDI Events
Timecode Machine
SMPTE-MIDI Converter
MIDI In Out
SMPTE In Out

#	Description	Channel	Note	Level	Durat
1	Door 1	2	F4	63	s0.00
		0	A4	39	
		1	E5	55	
		1	F4	71	
		1	F4	71	
2	Door 2	2	G3	71	s0.00
		0	C5	127	
		1	C5	127	
		1	C5	127	
		1	C5	127	
3	Bottles falling	2	D6	31	s0.00
		2	D6	31	
		2	G6	27	
		0	G6	27	
		1	D6	31	
4	Female Scream	2	B5	71	s0.00
		0	C5	127	
		1	C5	127	
		1	C5	127	
		1	C5	127	

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SAMPLING SOUND EFFECTS

Flying your effects in live is a valid option (remember life before sequencers?), but it's a tricky one. Here is a technique for hitting SMPTE cue points. Most often, the video dub will have a window of SMPTE time code burned into it. Typical video rate is 29.97 frames per second. This is reflected by the rightmost number of the time code running from 0 to 29. Spot what SMPTE frame number the effect is supposed to happen at (say, 11). As the second the effect occurs in (the second righthand-most number) approaches, count the tens digit of the frame off as triplets—0/1/2/0/1/2/0/1/2 (trust me, you won't be able to read the singles digit). When you get to the right tens digit, play the effect. If the singles digit indicates you should hit it a little late (such as 11 vs. 10), drag a little (think of the blues). If it's just in front of an even 10 (such as 18 vs. 20), push it a little (think of Heart's "Barracuda").

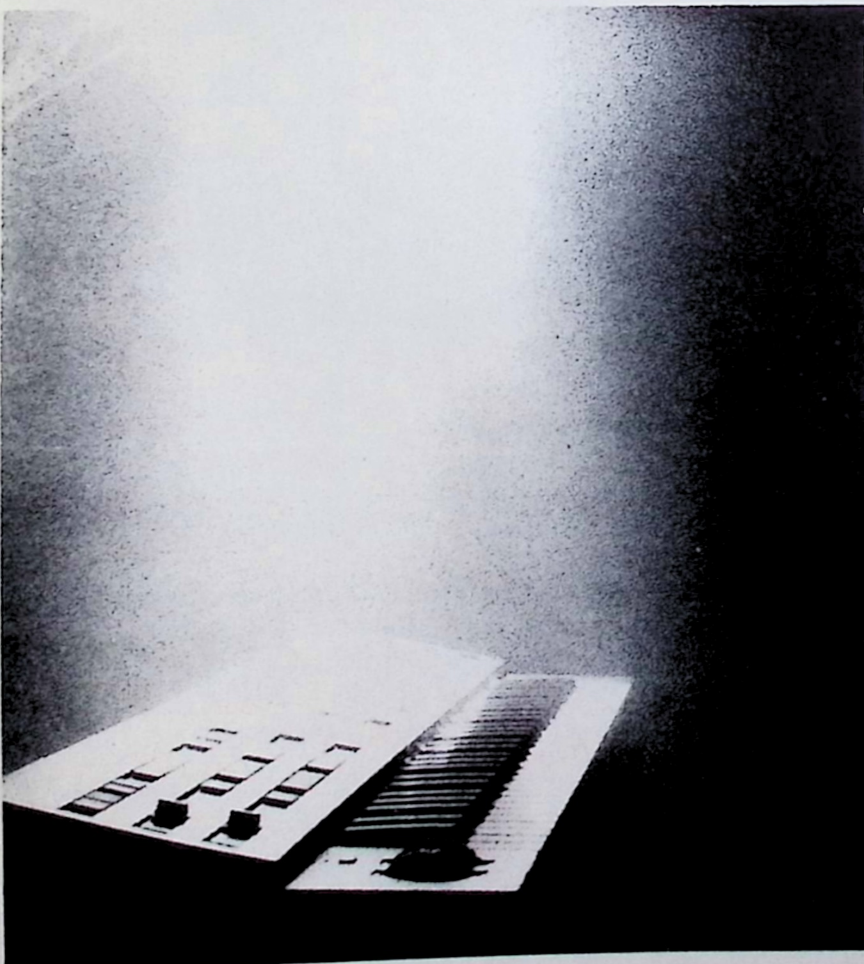
If your timing isn't tight enough, you can use a music sequencer locked to SMPTE in a limited way to help. Record the key you want for the sound effect as the downbeat of the first bar. Set the SMPTE start time of the sequence to equal that of the visual hit, and let it fly. You may find you have a slight, repeatable delay in your sequencer or sampler (perhaps two frames) that you might have to always factor in to be tight. Incidentally, E-mu's Emulator II saw a lot of use in the electronic Foley field because they were one of the first samplers and had a built-in SMPTE-locked sequencer. It also happened to have a two-frame delay.

Hitting more than one cue this way is difficult, just in trying to translate the difference between two SMPTE times into a tempo, bar, and beat. To get around this, sequencers that are based strictly on SMPTE time are starting to appear. Higher-ticket samplers, such as the Synclavier, Fairlight, and WaveFrame, have SMPTE "hit" pages. Hybrid Arts' ADAP Sound Rack now has this feature, and it's rumored for such samplers as the E-III and Prophet 3000. Digidesign created and released a whole program dedicated to these functions (Q-Sheet, see Keyboard Report, Oct. '87), and Opcode's Cue program has grown a hit page too.

CUE THE CLOSING DOOR

MANY RECORDING STUDIOS ARE looking toward video and film post-production work for income, since the musical side of the business is going a little soft. If you work a lot with sound and samplers, you may want to look in the same direction. Sound effects work can be a good deal more fun than practicing scales.

By the way, I'm still looking for a good wing flapping disk. Anybody got any tips? ■



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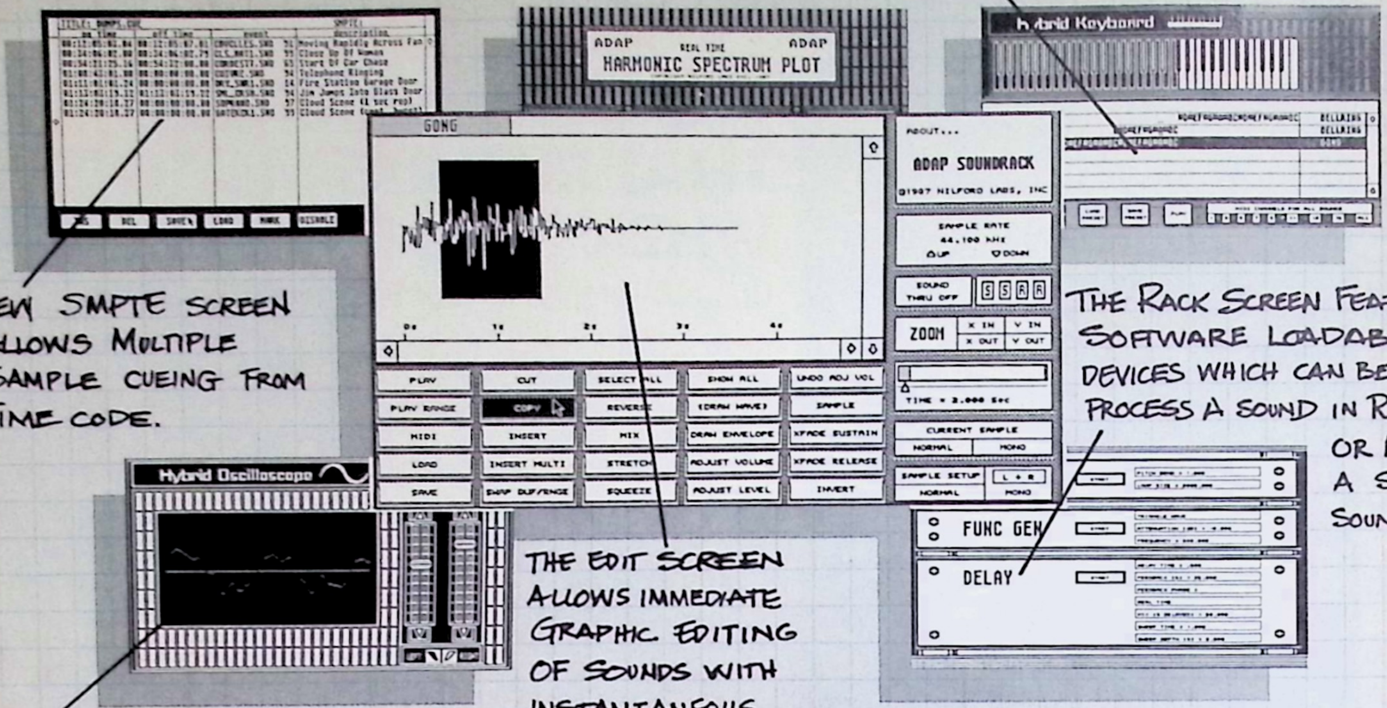
TITLE: BUMPS.CUE
SMPTE:
on time
off time
event
description
ADAP
REAL TIME
HARMONIC SPECTRUM PLOT
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GONG
ABOUT...
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SAMPLE RATE
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DOWN
SOUND THRU OFF
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X IN
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X OUT
V OUT
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CURRENT SAMPLE
NORMAL
MONO
SAMPLE SETUP
L + R
PLAY
CUT
SELECT ALL
SHOW ALL
UNDO ADJ VOL
PLAY RANGE
COPY
REVERSE
(DRAW WAVE)
SAMPLE
MIDI
INSERT
MIX
DRAW ENVELOPE
XFADE SUSTAIN
LOAD
INSERT MULTI
STRETCH
ADJUST VOLUME
XFADE RELEASE
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SWAP BUF/RNGE
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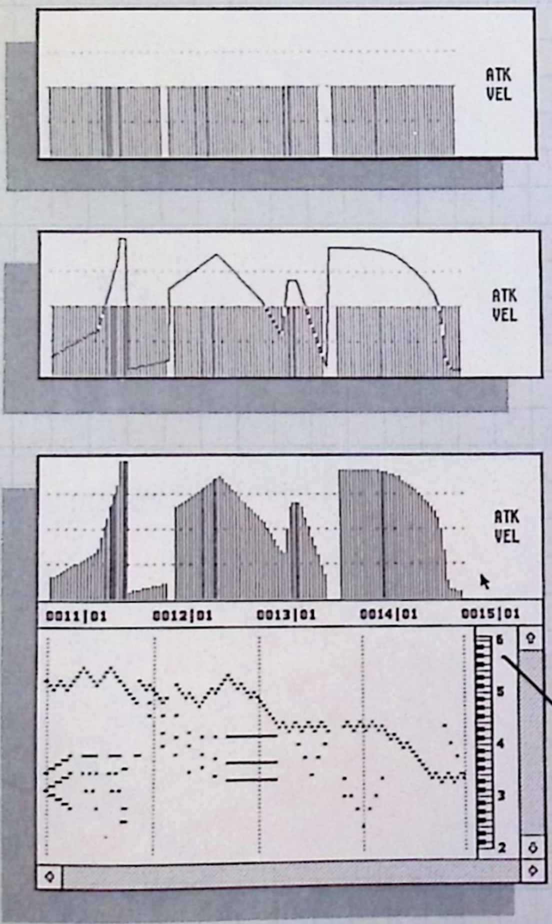
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BEFORE

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AFTER

NEW
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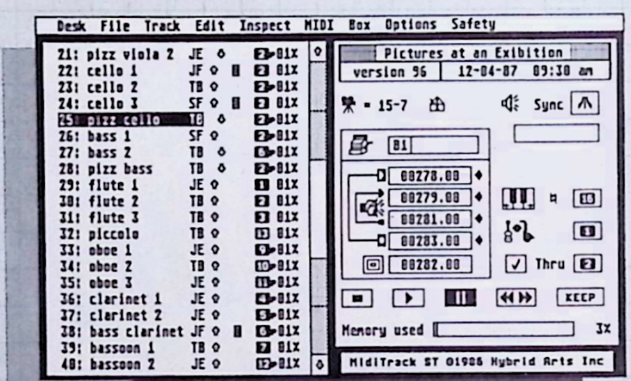
Desk File Track Edit Inspect MIDI Box Options Safety
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```
21: pizz viola 2  JE   2▸01X
22: cello 1       JF   2 01X
23: cello 2       TB   2▸01X
24: cello 3       SF   2 01X
25: pizz cello    TB   2▸01X
26: bass 1        SF   2▸01X
27: bass 2        TB   6▸01X
28: pizz bass     TB   2▸01X
29: flute 1       JE   1 01X
30: flute 2       TB   2 01X
31: flute 3       TB   3 01X
32: piccolo       TB   13 01X
33: oboe 1        JE   9▸01X
34: oboe 2        TB   10▸01X
35: oboe 3        JE   11▸01X
36: clarinet 1    JE   4▸01X
37: clarinet 2    JE   5▸01X
38: bass clarinet JF   6▸01X
39: bassoon 1     TB   7 01X
40: bassoon 2     JE   12▸01X
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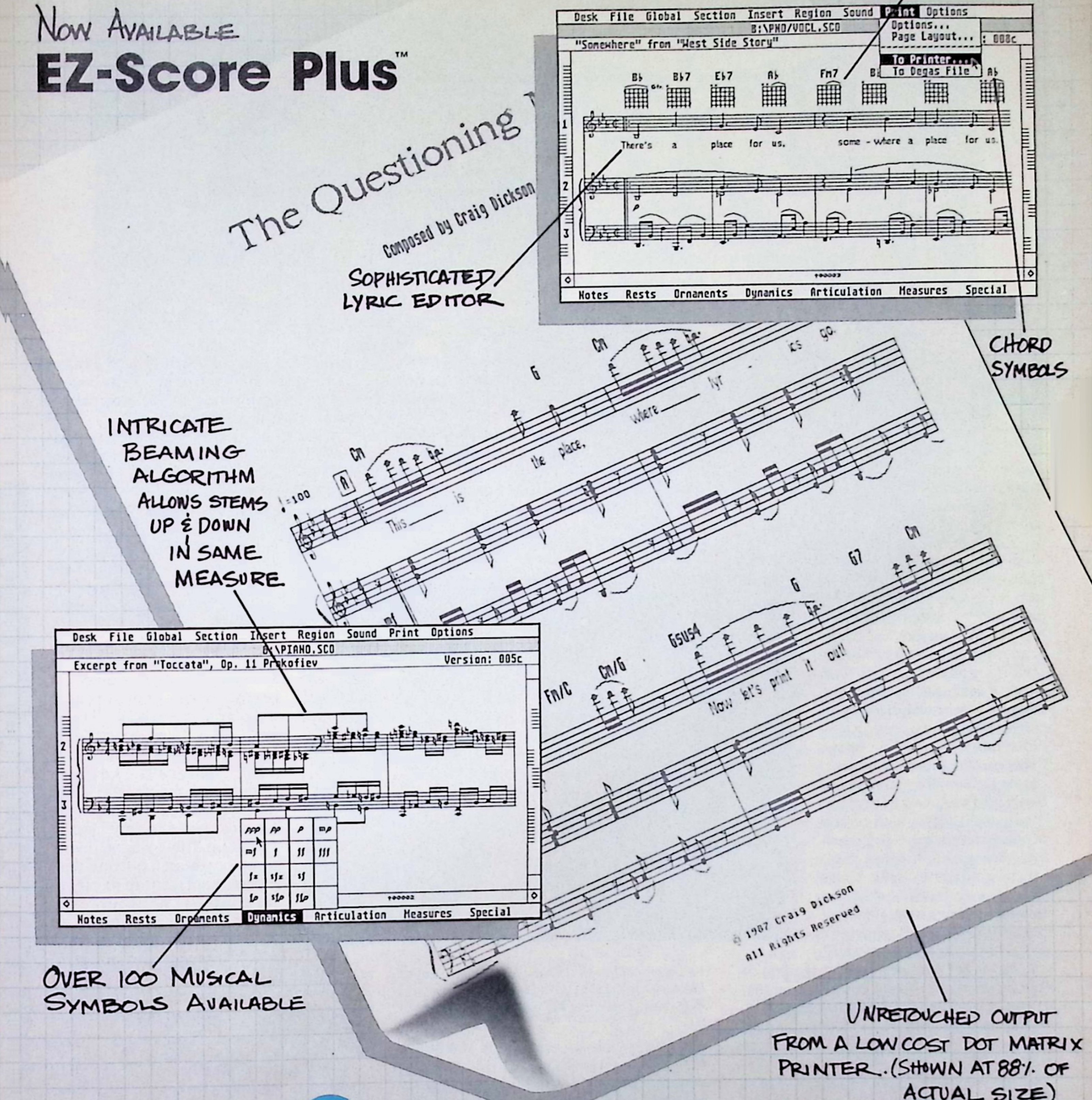
Guitar Symbols
Desk File Global Section Insert Region Sound Print Options
B:\PND/VOCL.SCO
"Somewhere" from "West Side Story"
Options...
Page Layout...
To Printer...
To Degas File
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Cm G G7 G5US4 Fm/C Cm/G
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Intricate beaming algorithm allows stems up & down in same measure
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B:\PIANO.SCO
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Bob James

TAKES ON THE TRADITIONALISTS WITH HIS HIGH-TECH TREATMENT OF SCARLATTI

BY BOB DOERSCHUK

HOLD IT RIGHT THERE! MAYBE you're in the habit of reading the Soundpage article in *Keyboard* before listening to whatever it is we're writing about. But this month, try something different. Before moving ahead to the next paragraph, pull that little disc out of the magazine and give it a spin. Don't worry, we'll still be here when you're done.

Two views of James at Remidi, his home studio: On opposite page, with Steinway grand and IBM clone; above, with Kurzweil 250 and IBM AT.

So, what did you think? Pretty nice, wasn't it? That was Bob James, a giant in the world of jazz and pop keyboards, doing an impeccable reading of the *Vivo No. 385 In F Major*, one of the Scarlatti sonatas featured in the upcoming album, *Scarlatti/Bob James*. Nicely orchestrated too, with an interesting balance of contemporary textures and the older harpsichord-like timbres that Scarlatti would have recognized. True, the classics have been synthesized before, but most such projects focus on orchestral repertoire. By choosing a composer known mainly for his keyboard works, James challenges himself and his listeners to overcome preconceptions of how this repertoire should sound and be phrased.

Now that you've heard a sample of *Scarlatti*, it may surprise you to know that James expects some people to give it a pretty nasty reception. In fact, they might get downright personal about it, in spite of the fact that many carry a lot of civilized baggage as respected academicians. Their main objections may not be simply that James recorded *Scarlatti* on a synthesizer/sampler/computer sequencer setup with nary a harpsichord in sight. Rather, he anticipates, they'll take issue with details of his performance—how and where he trills, where he does or does not repeat. And it doesn't bother him a bit.

"I've read enough of this sort of debate to enjoy confusing the issue by deliberately going to the opposite side," he gleefully reports. "I've always believed that there's not just room for more than one view on this music—there is a *necessity* for more than one view."

James' career reflects his faith in this dictum. He is a Grammy-winning player and producer, whose stylistic reach was noted in his Jan. '82 *Keyboard* cover story. In 1984 he stretched even further with the release of *Rameau/Bob James*. That album startled his fans as well as the classical community with its electronic renditions of keyboard works by the eighteenth-century composer Jean Philippe Rameau. Though the Rameau project seemed a logical preparation for the Scarlatti, James sees an important difference between the two.

"Scarlatti is much more widely known and performed in our time than Rameau," James points out. "With this album, I knew that I would be dealing with an audience that was very familiar with his works and with the different performance choices you can make. So I wanted to do my homework, and make sure that if I made choices that differed from those a conventional classical performer would make, I would have a reason for them."

Choosing Scarlatti as the subject of his second Masterworks album created one immediate problem. Since the composer wrote more than 500 sonatas, James had a huge list of pieces to choose from. That, coupled with the widespread practice of arranging Scarlatti collections by key progression or in major-minor pairings, made the winnowing process seem even more formidable.

James tackled the problem by storing very rough readings of a large number of pieces in Texture sequencer software and playing them back. "I think there were about 35 that I took to some degree of development," he recalls. "I experimented with them until I stumbled across the ones that made the most sense for my kind of technique. There was no rhyme or reason about it beyond that, except that I wanted to create big contrasts between each adjoining pair of sonatas, so that going from one to the next was like going from a string trio to a huge orchestra. I didn't make any attempt to pair any two together, or do a key progression, as if the album were some kind of a suite. To me, each piece was individual, separate, and complete in itself.

"I was interested to read that [early music scholar] Ralph Kirkpatrick faced the same problem in choosing which pieces to play," James adds. "He dealt with it in a similar way, by playing through as many pieces as possible and rating them with one, two, or three stars. Coincidentally, I rated my selections the same way. The ones that got three stars were the ones I used."

By focusing on Scarlatti, James also addressed a fundamental issue in keyboard music today: the relevance of tradi-

PHOTOS BY DREW WOHL

tional technique in the age of electronic sequencing. "My fundamental approach for *Scarlatti* was through my IBM computer and Texture," he points out. "The physical challenges that Scarlatti's music poses therefore became almost irrelevant, because there really isn't anything I couldn't get the computer to do within an hour of programming. With these editing capabilities, physical challenges became obsolete. So I had to make the music speak as music, rather than as some form of dazzling physical display. To play a series of sixteenth-notes extremely quickly and evenly is no challenge with the computer; you just enter it in. The challenge is how to make it musical."

This meant that a firm grasp of established performance practice was just as crucial for this project as for a harpsichord album—perhaps even moreso. Much of James' preparations involved reading authoritative essays on Scarlatti performance, and studying landmark recordings, especially those of Kirkpatrick and Vladimir Horowitz. And despite having Texture at his disposal to sequence difficult tracks, James committed himself to mastering many of the keyboard challenges that Scarlatti enjoyed posing.

"I wanted to take advantage of both the technology and my own technique," he says. "Most of the time I played the sonatas in real time because I found that I could bring more personality to the music that way. But I played them into the sequencer so that I could edit the performance afterward. I could set totally different timbres for each hand, or orchestrate interior echoes or answering phrases, so that flutes might play the first statements and French horns would echo them, for example."

But James did occasionally use Texture for more than orchestration. "Very often I'd come across something technical that I'd want to do, but it meant making a choice between practicing for months and months, eight hours a day, to get the phrase right, and entering it into the computer in one hour," he says. "Since I was working with electronic instruments anyway, I knew that giving live performances of these pieces would not be a major concern. It would be almost impossible to get the music to sound in concert the way it sounds on the album, because so much of it is layered and structured over a period of months with as many as 30 or 40 tracks. So why worry about whether I could actually play these parts on the keyboard? The only hangup I saw was the pride thing of dealing with people who would accuse me of not being able to play what was on the record. I dealt with that by learning to play some of the more virtuosic sonatas, so that if anyone challenged me, I could say, 'Oh, yeah?' and do it. Other than that, though, the performance aspect didn't really mean anything to me."

The further James plunged into this project, the more strongly he came to feel that much of the intrinsic value of Scarlatti's music has been obscured by the superficial excitement of his famous intervallic leaps and scalar passages. "I thought about the crossed-hands things he often wrote," James says, "in which he had so much fun giving the left hand real low bass notes and then making it jump all the way across the keyboard to play some melodic stuff way up high while the right hand plays some accompaniment figure in the middle. It's so obvious in the score, and when you read about it historically, that he was deliberately composing the pieces that way to make problems for his students to solve. So at first I began thinking that it doesn't make any sense to record this music without actually playing it that way. But then, when I thought about how most people hear these sonatas, on albums played through speakers, I realized that they couldn't see whether Horowitz' left hand is jumping back and forth over his right. It ended up being clear to me that although it's still fun to play that way, and it's certainly fun to watch how a pianist does it in a concert situation, Scarlatti's

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music speaks for itself way beyond the element of performance. It's delightful on its own merits."

Once he had grasped the essence beneath the technical veneer of these pieces, James allowed himself to take some chances in arranging them. On one typical crossed-hands passage, he remembers setting the low notes with a tuba patch and the high notes as a piccolo, thus emphasizing their value as independent lines rather than their virtuosic connection to one left-hand part. And, where Scarlatti emulates trumpet or horn effects with distinctive ornamental figures, James took that as an orchestrational clue as well. "You can't resist those episodes," he admits. "They just jump off the page. Where the pianist or harpsichordist has the challenge of evoking those associations in people's minds through phrasing, the electronic orchestrator faces the different challenge of actually articulating those sounds, and allowing the listener to hear the piece in a completely new way."

Arranging the Scarlatti pieces involved a more intuitive process than James had pursued in his work with Paul Simon, Neil Diamond, Hubert Laws, and other artists. Rather than sketching charts with pen and paper, James worked directly with Texture and various keyboards, forging ideas through trial and error. But the technology itself was only part of the difference; the keyboard orientation of the music proved a difficult hurdle as well.

"I didn't really have an overall concept when I started the project," James admits. "But by the time I got into it I realized that I wanted to run the gamut, from very small sounds up to huge orchestral textures. For the most part, though, Scarlatti's music resists larger orchestration. It's very transparent, very precise, and clear articulations always seem to sound better than big sweeping sounds. It was much easier to come up with workable timbres that were naked and intimate. More often than not, in getting these sounds, I worked on instinct. If something sounded good, I went with it. If I had been working conventionally, I might have thought, 'Well, I've got to have two flutes to balance this one trumpet, or four violins to balance these two French horns.' Nowadays, though, one flute sound can overpower 50 trumpets, depending on how you mix it."

On our Soundpage selection, James' arrangement centers on alternating keyboard textures for the A and B sections. A harpsichord sound is followed by a complex piano-like blend. Though he made extensive use of his Kurzweil 250, with additional coloration from his Akai S900 and Yamaha TX816, he can't recall details of how these sounds were put together. "Part of the problem with this process is that it is very spontaneous," he says. "Usu-

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ally we would start by storing the performance in Texture and editing it until I was happy with the dynamics and all that. Then I would separate the lines onto different tracks of the sequencer and set up different MIDI combinations until I found a timbre I liked, which more often than not was at least four or five layered TX voices combined with sampled sounds. At first I tried to write the combinations down in some way, but that became so tedious that we eventually gave up."

The *Vivo* also offers a good example of James' free use of dynamics. Where some Scarlatti performers restrict themselves to terraced levels of volume because of the limited dynamic options of the harpsichord, this version freely swells and sinks from soft to loud and back again. Like his methodology and choice of sounds, this reflects James' willingness to bypass traditional musical conventions.

"This takes me back to the fact that I prefer the piano to the harpsichord in interpreting this music," he says. "My ears and my feeling are so much more in tune with the piano. Purists will say that the harpsichord approach is much closer to what Scarlatti might have wanted, but 250 years have passed since then, and a lot of things have changed, including the fact that we have much more sophisticated instruments that are capable of incredible dynamics."

James is also quick to point out that most editions of Scarlatti do not include dynamics or harpsichord registration changes, leaving those matters more or less up to the performer to resolve. As far as the notes themselves, however, James insists on fidelity to the text, though on *Vivo* he took a few liberties. "On the repeats of both the A and B sections, I changed the trills around and did some more ornate stuff," he says, "although I think they're phrased in reasonably authentic style. I know that Kirkpatrick did a lot of that in his performances of Bach and Scarlatti, where a literal repeat section obviously offered the opportunity of being more improvisatory on the repeat. The *Vivo* is an example of that type of sonata. On most of the rest of the album, I was pretty faithful to the text."

For James, the lesson of *Scarlatti* is that diverse musical traditions can intersect, thanks to the tools available to the modern musician. But hand in hand with these opportunities comes a responsibility. Though he might not sympathize with those who object to his handiwork, he believes it essential to understand their objections, and above all, to consider their significance in terms of the fundamental obligation of making good music.

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sonata into a computer that it's almost embarrassing," he says. "Any decent computer person could do it in no time at all. But all you'd get back is a series of cold notes. Although the machine would play them back faithfully, anyone who bothered to listen would be pretty bored. Although you might not be playing live in the old sense, music is still about human beings communicating with one another. This is so fundamental that no matter what technological tools we have, we're still going to want that."

For that reason, James believes that there is no reason to mourn the disappearance of old performance practices. "I remember when I was a student, going to the practice room, studying, learning, playing a new piece slowly, one hand at a time, over months and years. It was kind of like doing push-ups. Knowing now how fast technology is moving, I believe that the old process is being replaced, and that the music of the future will deal with the development of a performance in a different way. Even though we're just at the beginning, and there's no way of knowing for sure how many people will become fascinated with this idea, certainly another option is here. True, there are many issues of musical morality involved in doing something like the *Scarlatti* album, but I think it's best to face them head-on, take advantage of whatever you can work with, and not worry about the implications. I don't believe being concerned about the moral questions is even my job. My job is simply to make the music." ■

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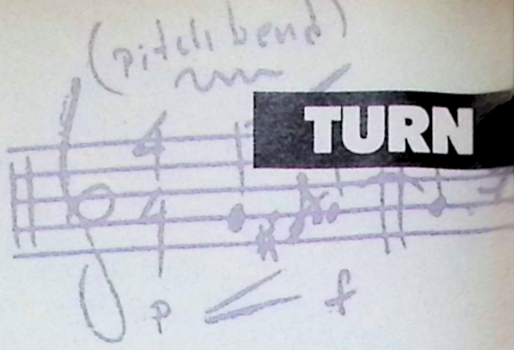

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BY JOHN LA BARBERA

"As a young arranger, I was always searching for some work that actually described the process involved in making orchestral rangements." —*Glenn Miller, 1943*

WELL, GLENN, WE'RE STILL looking for that one text that gives us the secrets and lays it all out for us. Unfortunately, that book will never exist, because arranging is an art that evolves hand-in-hand with music composition and technology; it is changing constantly. And, since it is an art, one can't effectively break it down into hard rules and regulations. We can, however, list and explore the various musical techniques that one might use to get a working knowledge of the field. It doesn't matter if you use a pencil and score paper or a mouse and a sequencer, the principles and techniques still apply.

Okay, La Barbera, quit talking and show us some hip voicings.

Sorry, Glenn, no voicings yet. So often, the novice assumes that the secrets of arranging lie in the chord voicings used by the various greats of the trade. Nothing could be further from the truth. We have to learn what arranging is before we get to any of that. Here's my definition of arranging: Arranging, in music, is the art of giving an existing melody musical variety for a listening audience.

The composer gives us the melody and we, as arrangers, strive to give it variety. Henry Mancini has said, "The song is the thing, and the arranger's function is to make it memorable, regardless of one's personal feelings." And variety—musical variety—is what makes the song memorable. This musical variety comes from our knowledge of the tools of arranging and how to use them. We'll list those tools in a little while, but first I want to explain the last part of my definition—the audience.

As arrangers (or composers or performers for that matter) we are always dealing with an audience, whether real or imaginary. If we wrote or played music just for ourselves it would not truly be a creative art. To be successful in the musical arts, one must always acknowledge the existence of a listener and create accordingly. It's somewhat like the old riddle of the DX7 falling in the woods; if there is no one around to hear it fall, does it make a sound? Suffice it to say that with even one set of ears around, the whole event has an impact. It becomes memorable. I believe that the success of our great arrangers is partially due to their conscious or subconscious acknowledgement of a listening audience. So, if you think about it, the arranger's job is to take a melody and play it for an audience for a certain length of time without boring them. If we played the same melody over and over with the same instruments for six minutes, they'd be reaching for the rotten eggs. We have to give it variety and make it memorable so as to keep the audience's attention. It's just that simple. How we keep their attention shows our talent as arrangers.

If we wanted to break down my definition into rules or commandments of arranging we'd arrive at something like the following.

Rule 1: Thou Shalt Not Bore. Strive to give the song or melody as much variety as necessary to capture and please an audience, while at the same time keeping the integrity of the composer's musical idea. This is such a fine line—balancing one's arranging techniques against the intent of the composer while maintaining a stamp of individuality—that it can take a lifetime to learn to do it consistently.

Rule 2: Know Thy Place. We must always remember that, as arrangers, we're subservient to the melody and must write accordingly. Unlike composers, we arrangers are not allowed the luxury of personal likes and dislikes when it comes to the melody or the musical style we have to work in. Disdain for a certain style or song shows through in your musical arrange-

---

John La Barbera's works have been performed and recorded by Buddy Rich, Woody Herman, Count Basie, and Phil Woods, to name a few. His commercial credits run the gamut from Alka Seltzer and CBS movies to Kodak.

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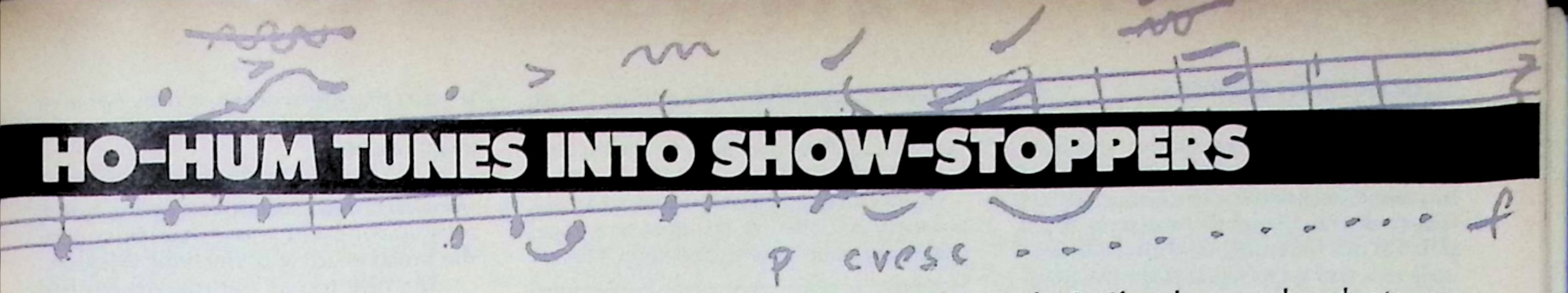


ment. (The hardest job I ever did was when Count Basie asked me to arrange Rubenstein's *Melody In F* for his band. I didn't care for the song as a Basie-style tune and I stared at blank score pages for weeks.) We have to divorce ourselves from our musical prejudices, listen to all kinds of music, and be prepared to cover any style with sincerity. Remember what Hank Mancini said—"regardless of one's personal feelings."

Rule 3: Know Thy Boss. Remember that we are ultimately working for someone else. When we take the job of arranger, we are not working for ourselves but for an audience with a composer or producer in between. We must strive to please both but fight like hell for the audience when confronted with a choice. I tell students that if I can get five percent of John La Barbera (a creative uniqueness or stamp of identity) in a chart, I'm more than pleased. The hardest pill to swallow is when you bring your finished masterpiece to a bandleader and he immediately cuts out the hippest interlude you've ever written. All of us, no matter how famous we become, must be prepared to give up our most prized musical child at the whim of the client. The best advice I ever received from any arranging book was from Mancini's *Sounds And Scores* [Cherry Lane]. I underlined the last paragraph on page 11: ". . . Finally, don't fall in love with every note you write . . . . Be prepared to eliminate anything that tends to clutter up your score, painful as it may be to do so." Even if you are the composer/producer and it's your record label featuring you as the artist, the audience is still the boss. Keep that in mind and you'll find arranging decisions much easier to make.

Now then, if you're still with me, we'll try to dissect this art. The first thing we need is a melody. How about Chopin's *Nocturne In D♭ Major*? Well, maybe not.

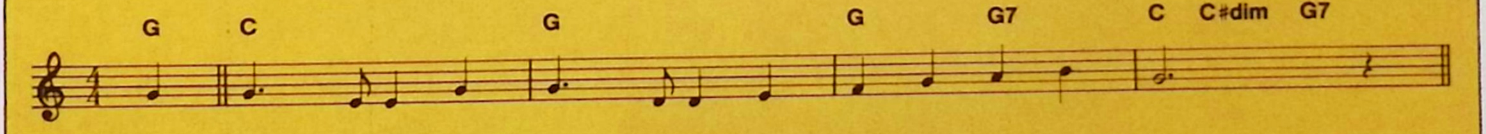
I'll settle for *America The Beautiful*. Nice melody and basic chord changes. The four-bar sketch in Ex. 1 is like the typical bad lead sheet you're usually handed, only much cleaner. We know it as a patriotic song, but the style makes no difference because we as arrangers can make a melody anything we want. Which brings us to another important rule of arranging:

Rule 4: Know Thy Styles. We must be familiar with the idiom in which we intend to place the melody. In simpler terms, if you have never heard a pop tune, you can't successfully arrange a melody in that style. Or, if you've never heard uptown country, you'll be spinning your wheels when it comes time to cover that style. So, it's obvious that if you aren't familiar with a style of music, you can't successfully arrange in it. That seems pretty obvious, but I've seen students try to arrange a big band jazz chart who have never heard of Basie or listened to Woody or the Duke. So, before we can become arrangers, we have to know our musical styles and learn what instruments, rhythms, and harmonies are basic to each idiom. Any commercial jingle writer/producer will tell you that you not only have to be able to cover any of the musical styles but be prepared to create hybrids of any or all on the spot to cater to the whims of the people from the ad agency—"Uh, yes, I know exactly what you're looking for now—a rap country feel with a new age/'60s Beach Boys piano, a *cappella* style. Gee, I'm sorry I took so long to get it."

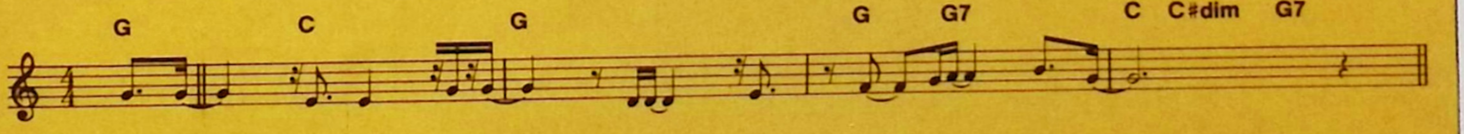
Now, let's get down to the nuts and bolts of arranging by listing all of our tools and putting them in an arranging road case. These are what I call the six variations used in arranging, and we'll get our roadie to pull them out one at a time and illustrate how each of them works.

Continued

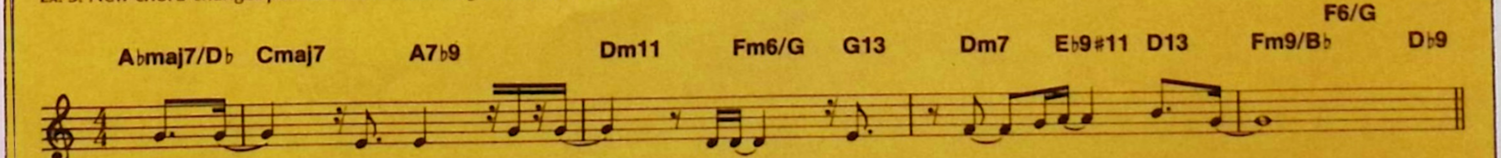
Ex. 1. America The Beautiful—*straight and simple.*



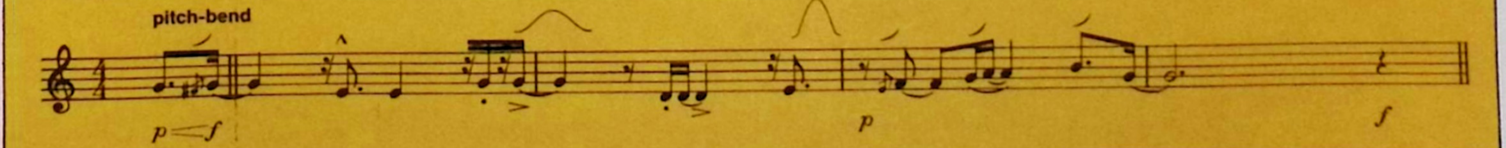
Ex. 2. Slightly varying the rhythm gives new life to the melody.



Ex. 3. New chord changes provide some refreshing harmonic interest.



Ex. 4. The addition of articulations, pitch-bends, and dynamics furthers the growth of the melodic arrangement.



ARRANGING BASICS

We already have a melody. Now how about a style? Let's say an imaginary client has asked for *America The Beautiful* in a jazz-rock straight eighth-note style. We'll pull out our first musical tool, rhythmic variation, and go to work. After the original melody is stated (Ex. 1), we can change the rhythm, even if only slightly, and we automatically achieve some musical variety.

Why not change it right off the bat? Well, don't forget the audience. We've got to let them know what the song or melody is before we can dazzle them with our musical handiwork. Once the public has the tune lodged in their heads, we can play with that melody and thereby create the variety needed to keep their attention. They may not be able to tell the difference, but they will know something has changed. Ex. 2 shows what we could do to the rhythm the second time we state our melody.

Changing the notation of the melody is only one rhythmic device we can use. Another device would be to start out in one meter and then change to another, like 3/4 after starting in 4/4. This can be done only if the style permits it. Or start with a samba groove and change to swing azz (once again, if the style allows). Use an accelerando or double the tempo. Or, go to half-time (this is very effective in the straight eighth or rock idiom). The list goes on and on.

Use your imagination and add your own ideas to the list. It might be a good idea to write out this list and keep it handy when you're working. It helps, sometimes, when you're stuck for an arranging idea, to have a master reference close at hand—especially when you've been up all night and it's 30 minutes until session time. Writing down such information is a good discipline to acquire early in your musical career. I used to think I could remember any musical idea that came to mind. Not true. Write them down as they come or carry a tape recorder with you. Believe me, it will pay off.

RHYTHMIC VARIATION

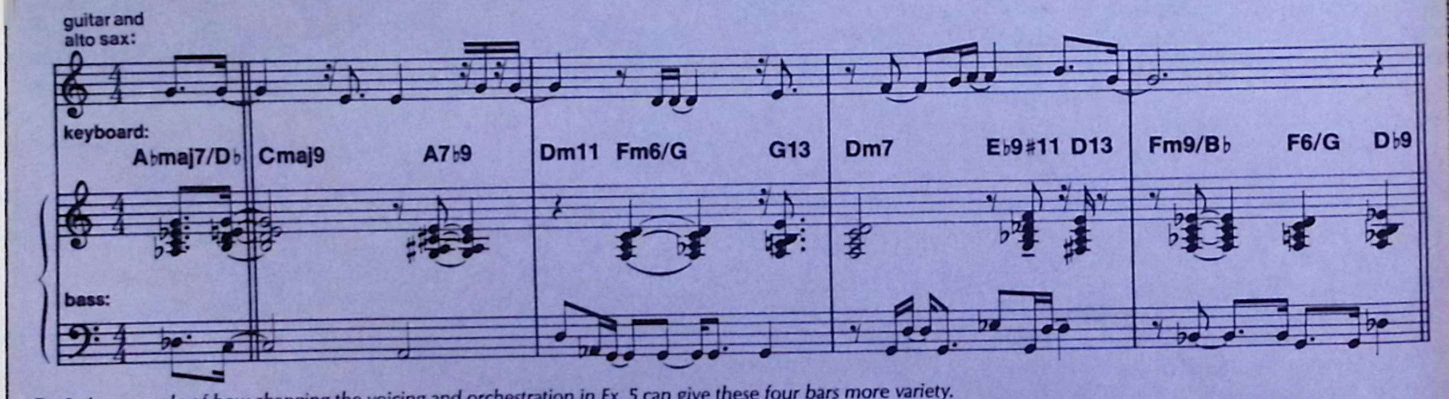
1. Change the rhythm of the melody.
2. Change the rhythmic feel (double-time or half-time).
3. Gradually speed up or slow down the tempo.
4. Refrain from using one rhythm for any length of time.
5. Displace the melody relative to the bar line by a uniform value.
6. Change the meter.

To give you a head start, we'll compile a list of arranging devices (see the box at left), starting with those that I put under the broad heading of rhythmic variation.

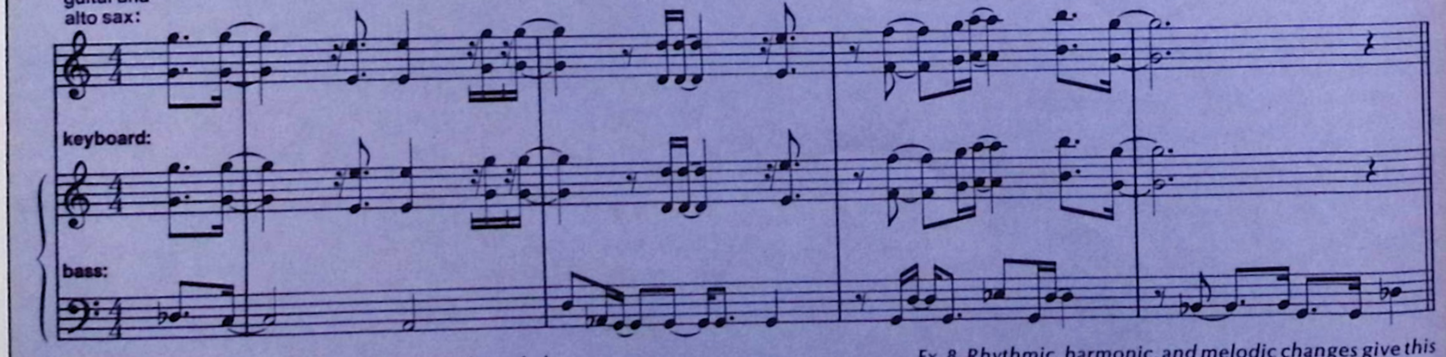
The next tool in our road case is harmonic variation. An arranger is very much like a magician. After stating a melody to an audience we try musical sleight-of-hand to keep their attention, because if the audience can predict what's going to happen next, we lose their attention and therefore are not as successful as arrangers.

Every melody comes with its own harmony or set of chord changes, whether given or implied. If we change the harmony after our audience has heard and absorbed the original chord changes, we automatically create variety. So, the use of substitute chord changes, or reharmonization, is one device in the harmonic category. Our rhythmically changed melody of *America The Beautiful* (Ex. 2) used the original simple set of chord changes. Since our audience has accepted and absorbed these, it's time to pull the old musical sleight-of-hand. We can replace the rather boring original changes with new ones that support the melody and give it a new character. We could now conceivably re-

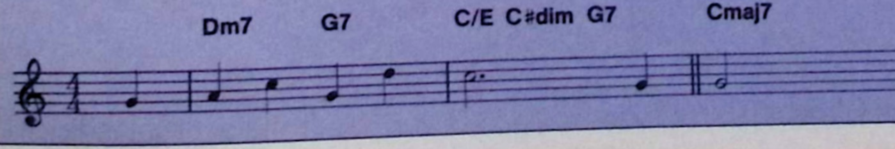
Ex. 5. Basic voicing and orchestration of America The Beautiful.



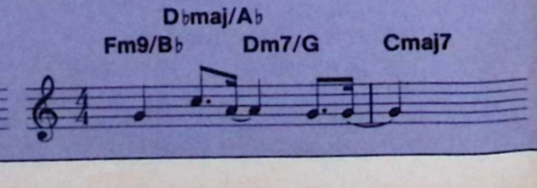
Ex. 6. An example of how changing the voicing and orchestration in Ex. 5 can give these four bars more variety.



Ex. 7. A traditional introduction—an excerpt from the melody.



Ex. 8. Rhythmic, harmonic, and melodic changes give this introduction a twist.



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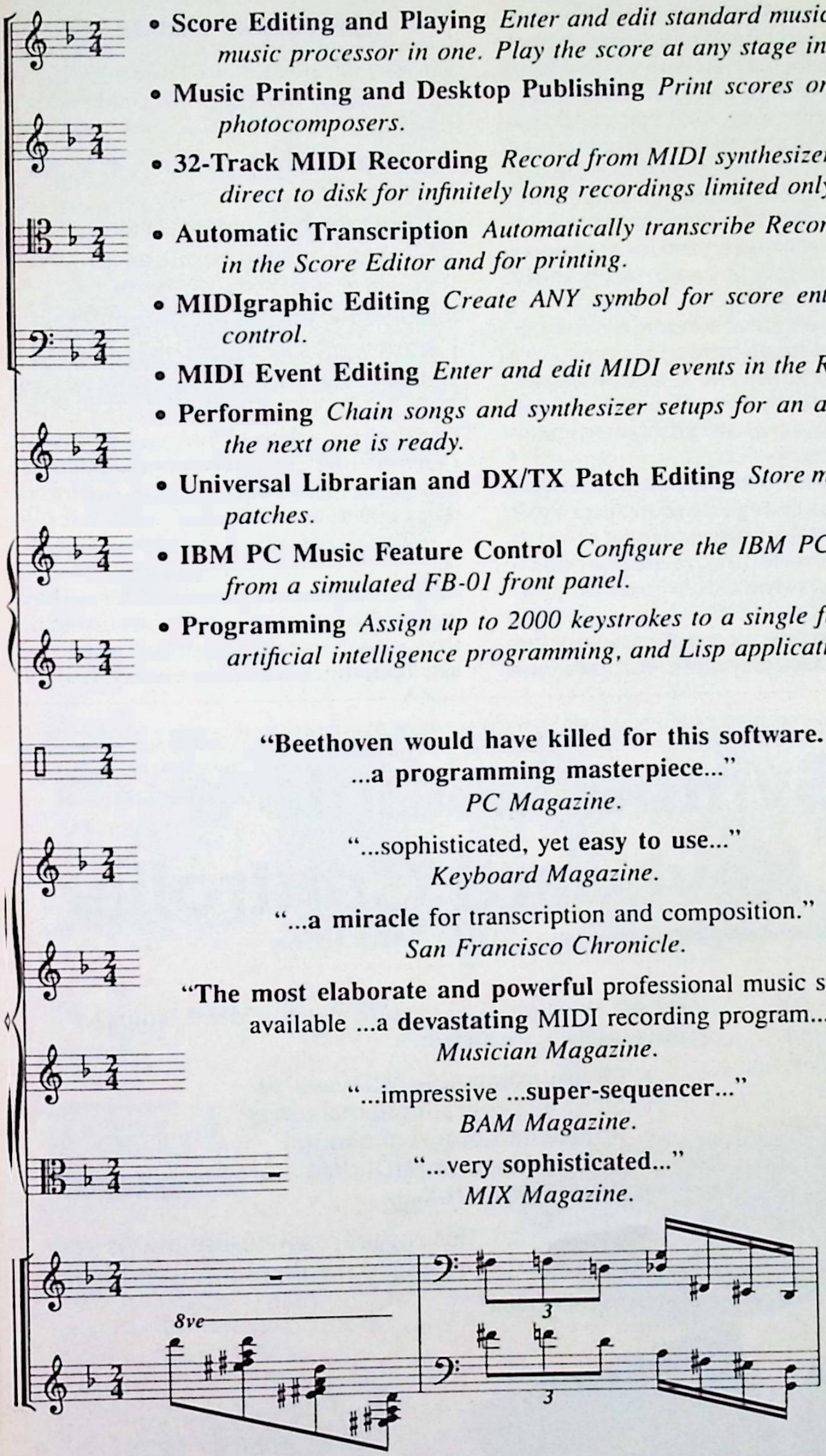

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peat our rhythmically changed melody in Ex. 2 twice and get away with it because we switched chord changes. Our audience is willing to accept the melodic repetition because we gave the melody some harmonic variety. (See Ex. 3).

HARMONIC VARIATION

1. Substitute chord changes (reharmonization).
2. Change melodic modes.
3. Use counterpoint to imply new harmonies.
4. Modulate to new keys, either subtly or drastically.

If you take a close look at Ex. 3, you'll notice that I use chords like *Fm6* over G instead of *G9sus4* and *Abmaj7* over *Bb* instead of *Ab9sus4(11)*. This kind of chord language leaves little guesswork on the part of the player. Strive to put things in their simplest form when trying to communicate your ideas to musicians. You'll find that it helps cut rehearsal and studio time to a minimum. The same goes for using double-flats and double-sharps on a 0-second car jingle. The name of the ame is get it done on time and within udget, not to play "Stump The Band."

Why not change the rhythm of the melody in Ex. 3 at the same time we throw in some new chords? Good question. The answer is, why waste your tricks? Another secret that seasoned writers share is that a new device introduced into the chart has effect, but the more devices or variations you add to a chart at the same time, the less impact each will have. Keep this in mind when you have the temptation to empty the whole road case of tools into the same section of a melody. As with all devices in arranging, we must remember that we are working for the song. Anything we add has to support the melody and not overpower it. I find that harmonic variation is the one tool that's most overused by arrangers and is an area where we can get into the most trouble. Hip changes, used for the sake of being hip, rarely fit comfortably into a well-balanced chart.

There are other harmonic devices besides chord substitution that can give a melody harmonic variety. Changing melodic mode, modulating to a new key, and even adding a counterpoint line can fall into this category.

Now we have two arranging tools at our disposal. Let's go on to another. I call the next device performance variation. It encompasses quite a few items that we don't always think of when doing an arrangement.

These are the performance techniques we use when we play music—articulations (long, short, etc.), ornaments (turns, trills, pitch-bend, vibrato, etc.), and dynamics (crescendo, decrescendo, sforzando, etc.). Using any of these performance devices in your arrangement can change its character considerably.

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PERFORMANCE VARIATION

1. Vary the articulations of the melody.
2. Vary the dynamics of a phrase or section.
3. Use ornaments, such as trills, turns, and grace notes.
4. Use pitch-bend or modulation.
5. Take advantage of instrument mutes (plungers, straight mutes, etc.).
6. Use effects that are unique to individual instruments, such as half-valves, squeaks, etc.

What about plungers? Doo-wa, doo-wa.

Thanks for reminding me, Glenn. They too can be a performance variation, but they cross over into another category. We'll put them in our list anyway. Now, if

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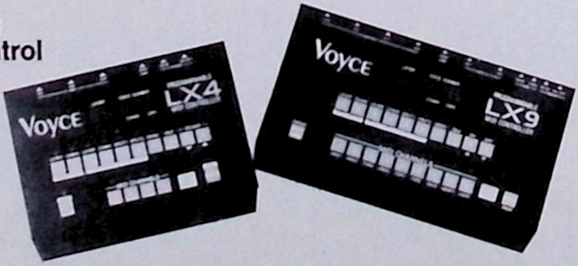

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we want to repeat a melody without changing the chords or rhythm, we can keep it fresh by just changing its articulation. Switching from loud to soft on a repetitive phrase can keep the audience's attention from wandering to the exit signs in the theatre.

Let's take a look at our melody in Ex. 3. If we add a little pitch-bend, combined with other articulations and dynamics, we create a phrase with a whole new personality (see Ex. 4).

What about chord voicings, you may ask. Isn't he ever going to get to chord voicings?

How about clarinet lead over two altos and two tenors?

Sorry, Glenn, not yet. But that brings up an interesting point. People tend to interchange orchestration and voicing. They use the term voicing when they really mean orchestration and vice-versa. It's very important to understand the difference. When beginning students come to me with questions about arranging, the first thing they usually say is something like, "I've been working on this chart and I want to use this sax voicing but I'm not sure if it will sound." Or, "Will this half-step between the cellos and violas work?" This aspect of arranging, the voicing and orchestrating of chords, is just another tool in the art, but it always seems to attract the most attention. I guess it's like a slick paint job on a Porsche—the most important parts are under the hood, but the paint job gets the attention. So, let's clear this up right now. Voicing is the putting together of a chord in a certain way, with the notes stacked in a certain order. Orchestration is simply what instruments are assigned to play the voicings you create.

Let's talk about voicings. We all should know the difference between a closed voicing and an open voicing, a cluster and an octave unison. Voicing techniques, especially in jazz, are usually the individuality stamp of the arranger. I would voice and orchestrate a certain passage differently from my colleagues. If we've listened enough to any idiom we can probably pick out the individual arrangers by their style and voicing techniques. Traditionally, a composer/arranger would give a sketch of his or her work to an orchestrator, who, in turn, would use standard rules for assigning the different musical lines and chords to conventional bodies of instruments. In today's music, there are so many new instruments, recording techniques, and consolidations of music styles that there are fewer and fewer standard rules of orchestration. So what was once a separate trade has now become an additional, necessary skill of the arranger.

VOICING

1. Close.
2. Open.
3. Cluster.
4. Unisons or octave unison.
5. Unison.

We'll use the harmonically remodeled version of Ex. 3 to illustrate the difference between voicing and orchestration. We can't get away with playing these four bars twice the same way unless we change or add something. So here is where voicing and orchestration help us. If we are given a fixed instrumentation, we can change the orchestration and voicing to give each four bars variety. In Ex. 5, we have the bass playing the bass notes of the chord with a keyboard playing a basic four-note chord. The alto sax and guitar are playing the melody in unison. The second time we happen to repeat these four bars in our arrangement (Ex. 6), we keep the bass on the bottom with the guitar playing the melody an octave above the alto (the synth is playing the melody in octaves as well). Here, I want you to see that a drastic change is not necessary to achieve the musical variety we need to accomplish. Just the few changes that we made will keep the four bars fresh.

But no one is playing any chords the second time.

That's right, Glenn. No one is paddi the second four bars, but the audience w know the chords because they have ready been introduced into the arrang

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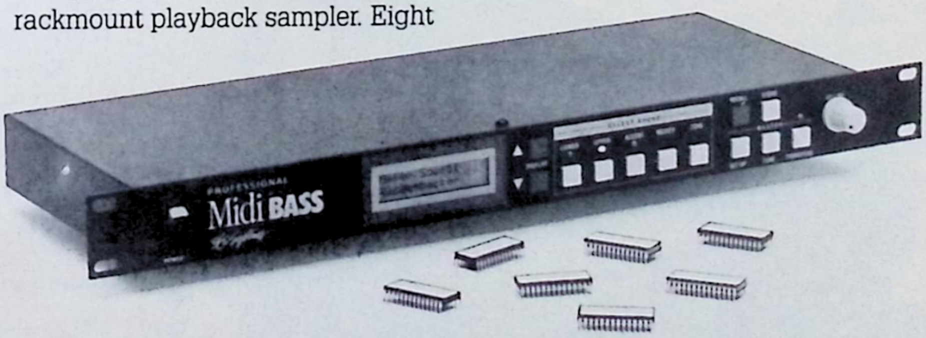

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ment. Although they are not restated as performed vertical chords, the audience will know what they are. They're implied by the bass line.

To recap, the voicing is the type of chord structure (unison, close, open, octave unison, cluster, etc.) and the orchestration is the body of instruments assigned to play the voicing. Orchestration and voicing allow us to create unique sounds or musical colors by combining different instruments. If we think of voicing and orchestration as two separate entities, it will be much easier to understand our job as arrangers.

On top of the endless possibilities and permutations of traditional acoustic instruments, we now have to contend with the modern instruments (synths, samplers, etc.). These new instruments are a challenge in themselves, and the combining of acoustic and electronic instruments gives us further combinations with which to achieve unique musical colors.

We can truly spend a lifetime experimenting with voicing and orchestration, but it shouldn't take the beginning arranger that long to find those combinations that fit and seem comfortable with his or her writing techniques. These combinations go toward making up an arranger's style. For example, Nelson Riddle's harmonic variation use of Lydian motifs identifies his work just as Duke Ellington's unique orchestration of his cluster voicings identifies his charts.

There is one more device—melodic variation.

Hey, that's the composer's job.

Yes, sort of. Melodic variation, this last piece of essential equipment, *is* composition. The composer rarely gives us intros or endings. The arranger is usually expected to furnish those. We arrangers are also required to compose counterlines, interludes, and background melodies as well, in order to give existing material variety. Here are some thoughts worth pondering: "Arranging, after all, is a euphemism," according to Alec Wilder, "for it includes composition as well as orchestration. The introductions, countermelodies, transitions, and reharmonizing are all more than just orchestration. But by using the word arrangement, they get two skills for the price of one." "The true art of orchestration," Walter Piston declared, "is inseparable from the creative act of composing music." And from Nelson Riddle: "An arranger occupies, in music, that shifting, almost indefinable ground between an orchestrator and composer."

MELODIC VARIATION

1. Use of countermelodies against melody.
2. Variation of melody or fragment of melody used for interludes between sections.
3. Introductions and endings based on secondary thematic material.

Those are just a few opinions from names you may recognize. So let's take our four bars of *America The Beautiful* and see what melodic variety we can give it. The obvious and more traditional thing to do for an introduction would be to use some of our melody to get into the song (see Ex. 7). By making a few simple changes, as in Ex. 8, we can take a cliché and turn it into something unique. That's arranging. Or, if we add a simple counterline to the original melody, it becomes more alive and gives the listener a sense that there's a lot more going on musically than there really is. That's also arranging. We can include all of these compositional devices under the heading of melodic variation. So let's put these devices in our melodic variation list and end our list of arranging tools.

It's undeniable that arrangers must wear many hats in today's music industry and must function sometimes as composers and orchestrators. That's why arranging is not a hack trade but an art that takes years to perfect. So if you get discouraged because it doesn't come to you right away, or, if after years of arranging, you still seem to get stuck, don't worry; join the club. ■

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Opposite page: Emerson with Korg Sampled Grand, Los Angeles, Jan. '88. Above: Emerson onstage during the Emerson, Lake & Powell tour, Nov. '86.

BY BOB DOERSCHUK

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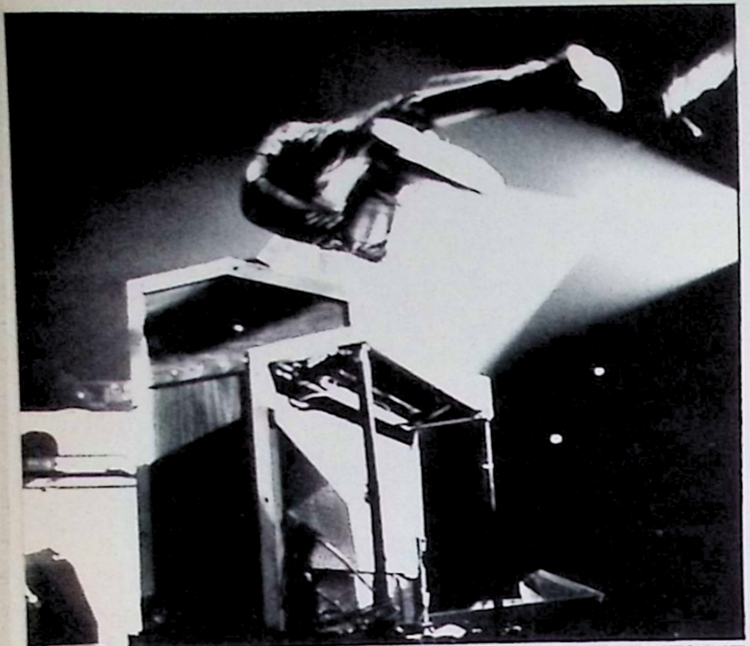

NEAL PRESTON 1977

ON THE NICE: 'I LISTENED TO THE *FIVE BRIDGES SUITE* THE OTHER DAY. IT MADE ME REALIZE WHAT A FINE IMPETUOUS BAND WE WERE.'

But then came *Love Beach*, the coda hat signalled the end of ELP. Following the ailure of that puzzling album, which might easily have found a place on MOR playlists, Emerson receded from view, apparently an anachronism in the new world of techno-minimalism. He wrote several film scores, but otherwise kept a low profile, first in the Bahamas, later in the English village he still calls home. Fans continued to profess their loyalty in letters to *Keyboard*, but rather than asking how Keith did thus and such on his latest LP, they began extolling their hero in terms of bewilderment and nostalgia: "What happened? Where'd he go? When will we hear him again?"

Two years ago, Emerson gave them an answer, emerging from exile with his third three-piece band, Emerson, Lake & Powell. Drummer Cozy Powell's cannon-blast beat created a tighter, simpler rhythmic framework than Carl Palmer had generated in ELP's extravaganzas. Perhaps this was a concession to changing tastes. Rather than be immobilized by complex displays of technique and endurance, audiences were reverting back to the basics of dance. *Emerson, Lake & Powell*—the album, the band, and the tour—obliged with a catchy, concise package of tunes, played with panache and sung by bassist Greg Lake in his familiar choir-boy style.

And they might still be playing and singing today were it not for two problems: disputes with management, and the continuation of personal difficulties that had long festered between Emerson and Lake. As Keith cautiously explained in his July '86 *Keyboard* interview, "My relationship with Greg is still inclined to be a little volatile on occasion. . . . Once Greg is convinced something works, he puts absolutely everything into it. It's the convincing that gives me the grief."

Unfortunately, these difficulties persisted. Despite the artistic success of the Emerson, Lake & Powell tour, the group called it quits after coming off the road. Powell left to play some sessions, and Keith was left to ponder the future. Perhaps inevitably, that future turned out to involve Carl Palmer. Fresh from a long successful stint with the group Asia, Palmer expressed interest in getting together with his old sidekick Emerson, and even brought a new name into the picture: Robert Berry, a California native whose guitar, voice, and songwriting chops earned him a berth in their new band.

In the succinct spirit of post-progressivism, the band is called 3. Their sound, as captured on the album *Three To The Power Of Three*, follows the lead of such bands as Loverboy and Kansas—bands that drew much of their inspiration from Emerson's earlier work. But 3 isn't merely a derivative act. They make full use of their heavy artillery—Emerson's continuing wizardry on the keys—to move beyond most bands' improvisational limits. Quite simply, Emerson is in great form on *Three*, soloing authoritatively on "Desde La Vida" and 3's remake of "Eight Miles High," and orchestrating sensitively on every cut. His keyboard sounds are like a timbral kaleidoscope, tumbling from modern digital textures to the classic grinding grit of his '60s Hammond organ settings. In Emerson's hands, it all blends smoothly, a wash of colors that obliterates the lines between old and new.

The lesson of *Three* is that the same personality, the same solid chops, the same spirit that animated *Tarkus*, *Brain Salad Surgery*, and *Works* lives on in Emerson's current four-minute niblets. He's the same guy—amiable, informal, self-deprecating offstage, charismatic and overwhelming onstage, challenging and crea-

KEITH EMERSON: A SELECTED DISCOGRAPHY

With 3:
Three To The Power Of Three, Geffen, 24183 (LP, CD, & cassette).

Solo Album:
Nighthawks, MCA, 1521 (LP & cassette).

With Emerson, Lake & Powell:
Emerson, Lake & Powell, Polydor, 8929297 (LP & cassette).

With Emerson, Lake & Palmer:
Best Of, Atlantic, 19283 (LP, cassette, & CD).
Brain Salad Surgery, Atlantic, 19124 (LP & cassette).
Emerson, Lake & Palmer, Atlantic, 19120 (LP & cassette).
In Concert, Atlantic, 19255 (LP & cassette).
Ladies And Gentlemen, Manticore (dist. by Atlantic), 3-200 (LP & cassette).
Pictures At An Exhibition, Atlantic, 19122 (LP, cassette, & CD).
Tarkus, Atlantic, 19121 (LP & cassette).
Trilogy, Atlantic, 19123 (LP & cassette).
Works, Vol. 1, Atlantic, 2-7000 (LP & cassette).
Works, Vol. 2, Atlantic, 19147 (LP & cassette).

With The Nice (all out of print):
Ars Longa Vita Brevis, Immediate, 52020.
Elegy, Mercury, 61324.
Five Bridges Suite, Mercury, 61295.
Nice, Immediate, 52022.
Thoughts Of Emerlist Davjack, Immediate, 52004.

With Other Artists (all out of print):
An Old Raincoat (Rod Stewart), Mercury, SR6-1237.
Flat Baroque & Berserk (Roy Harper), Chrysalis, 1160.
Music From Free Creek (Free Creek), Charisma, 101.

tive in the studio. He's equally at home playing before thousands of fans, or jamming at his neighborhood pub with the house jazz combo, known locally as the Blue Job. Never mind changes in style; Keith is Keith, a musical force to be reckoned with. Unlike many trendies who have sequenced their way to momentary success, he will survive. Ooh, what a lucky man he is!

* * * *

MANY OF YOUR FANS MUST BE wondering how you moved from Emerson, Lake & Powell to 3. When we last spoke, you seemed to be enthusiastic about working with Cozy Powell and Greg Lake.

Well, the tour was great. I was delighted to be back on the road again after seven years. I thought it might be difficult to get back into that environment, but I was quite surprised. From the first gig, it was like I'd been out there doing it the day before. That gave me confidence, because I had worked myself up into a bit of a state: "Will they still like what I do? Can I still deal with the performance situation?" Various yoga techniques helped a lot with that. And of course, the friendliness of the audience helped. So it wasn't a hassle at all. We were all disappointed when the tour came to an end, although it's always nice to get back home. The real disappointment was that because of bad management, the band hadn't generated that much money on the road. I must have gotten back with less than $500 in my pocket. When that happens, everybody looks to somebody else to blame. And due to unresolved personal conflicts between Greg and myself, I said, "It's time to put ELP on hold."

So that's the end of ELP?

What I really want to say is that ELP is not dead. It is literally being put on hold for the time being. Carl [Palmer] will go along with that too. We tried to make the original ELP work, but it just wasn't up to what we wanted from it. So Carl, who knew Robert [Berry], suggested that I meet with him. Robert was in England working with GTR, and he wasn't entirely satisfied with that arrangement. So we met, and I heard his songs. We got into the studio and made some demos together. Geffen Records like them, and that's it. It's certainly a very happy band to work in. No moodies. And things get done extremely quickly, which suits me fine. I don't like to sit around and discuss this and that.

Apparently Robert has long been a fan of yours. When you invited him to join 3, was he initially star-struck or intimidated at the thought of working with you?

No, Robert's not that sort of a person. If he had been star-struck, I don't think I'd have wanted to work with him. Robert has had a lot of experience dealing with other musicians, running his own studio, producing and arranging stuff back in his home town [San Jose, California]. When he came to England, he worked with [guitarist] Steve Howe in GTR, so he gained quite a bit of experience. I don't think he quite expected to be asked to work with Carl and me, but since then he's gotten a much clearer idea of how the band works. We'll probably see some very dramatic changes in the next album. I'm especially looking forward to establishing a closer writing relationship with Robert. This band was brought together very quickly, so it's mainly been a question of me bringing in my songs and Robert bringing in his songs. I'm looking forward to developing this Anglo-American sound we're working on together.

What do you mean by "Anglo-American sound"?

Well, it's obvious which tunes Robert wrote and which tunes I wrote on this record. They stand out distinctly. I think his compositions come off sounding very West Coast. Mine come off sounding very European. I'd like to try to hone off the edges, so to speak, or file away the differences.

ON EMERSON, LAKE & PALMER: 'WHEN I LISTEN BACK TO ELP, IT DID GO ON QUITE A LOT. GOD, DID WE GO ON!'

NEAL PRESTON 1977

But there are similarities in your styles too, especially in your preference for big stadium-like sound.

That was important for both of us. We wanted to have that feeling of majesty.

Usually you write most of the material that your bands wind up playing. Was it difficult to learn songs written by someone else this time around?

Well, Robert had very concise demos. What pleased me a great deal was that he encouraged me to put myself into his arrangements. I've heard that before, of course. I've worked with other people who've written songs, and when you come in and say, "I'd like to do this," they say, "Well, hang on a minute! You can't take that bit out. That's very important." But Robert insisted that he wanted to hear how I interpret his songs. It wasn't until we got into the studio that I actually believed that he meant it. And he did. There were a few occasions where I had to persuade him to accept some of my ideas, like modulations into a different key when you hold a long note. That was odd for him at first, but after getting used to it, he liked it.

The clearest example of that is on "You Do Or You Don't."

Yeah, that's the one.

It's a fairly simple tune, based on a descending chromatic line, which makes the impact of a key change that much more effective.

That's why I felt a key change was necessary. It is a familiar sort of chord structure, quite similar to a few other songs, so I felt the arrangement needed a definite change, rather than staying in the same key. You don't want to overdo key changes, though, because that can come out sounding a bit like Chicago. Not that I'm against Chicago, but we just don't want to have that effect.

Your personality on Robert's tunes seems to come through most strongly in the instrumental interludes.

Yes, although I try not to be too obtrusive when I'm supplying padding. There's a fine line between the artistry you want to accomplish and the fact that you're playing a song, so you can't make it a keyboard exhibition all the time. The role of the keyboard, especially in this day and age, is to provide a setting, to try and bring the song through. Hence, in "Chains," you've got a clanking sound you can identify with the title.

You also play a descending line in each chorus of "Chains" that echoes Robert's vocal. Was that part of your arrangement as well?

That's right. All of the developments I did in Robert's music were taken from his motifs. I might reverse his motif and do an inversion, then develop any solo arrangements in the middle from there. It's not like writing a whole different thing when I do an instrumental mid-section; I like it to flow from what happens in the rest of the song.

Your instrumental section on the last cut, "On My Way Home," is quite a complex bit of writing. When putting these sorts of episodes together, do you work on paper, or evolve the arrangement on the keyboard?

JOHN OLSON 1986

When I wrote that piece, in the section where I go up to G, I incorporated a lot of themes from the Nice, because of the memories I associate with it. I came up with a brief idea, wrote it down on manuscript paper, went for a run, and finished it when I got back.

What were some of the Nice pieces you quoted from?

"Rondo," "America," the *Five Bridges Suite*. I molded all those themes together.

Why are memories of the Nice associated with "On My Way Home"?

I dedicated the piece to Tony Stratton-Smith, who was the manager of the Nice. It was Tony, actually, who introduced me to Carl Palmer when we formed ELP. Tony died last year. A very distressed Brian Davison [drummer with the Nice] broke the news to me over the phone. Then Lee Jackson [bassist with the Nice] called up, and said he was going to come over for the funeral. I was very upset. My whole family was, in fact, because we really liked the guy. He was well loved in the recording industry. So I thought, "Hell, I'll use this emotion to write a piece of music." So I sat down at the piano and wrote this ballad. Tony's office called up and said that there was going to be a memorial service. I told them I'd written a piece of music, and they said, "Would you like to play it at the service?" I'd never played a memorial service before. It's not an easy gig, quite honestly. You get up there and perform, and nobody claps. Everybody cries. Fortunately, it was broken up by a lot of people from the entertainment industry who got up and said funny things. A guy from Monty Python launched into "Always Look On The Bright Side Of Life."

Will you be able to keep the emotions behind the song fresh on the road, even after playing it night after night?

I don't really have any difficulty recalling that emotion, because there will always be people out there who haven't heard the song before. There are also various subtle aspects that change each performance, such as the acoustics of the building. And sometimes I might want to labor one part of it a little more than I might have done the night before. It's just a nice piece of music, and I enjoy playing it. I'm sure I'll go on playing it for years, and still get the same feelings I had when I wrote it.

ON 3: 'THIS IS THE MOST COMMERCIAL CONTEXT I'VE BEEN INVOLVED WITH IN MY CAREER.'

When you play old ELP or Nice music, can you remember the feelings that inspired those pieces?

Yes. I just had Lee Jackson staying with me in England, and we had our When We Club meeting: "Do you remember when we did this . . . " In fact, I listened to the *Five Bridges Suite* the other day. It made me realize what a fine impetuous band we were.

Impetuous in the sense of taking musical chances?

Yeah. And Brian Davison had a fine style for rock and roll. He definitely had his own style.

Your method of conceiving and polishing songs seems to have changed a lot since then.

What helped me was getting involved with film scores. That taught me how to streamline music. You become very disciplined in doing film scores. You can write something for a certain section of the film, and really love it. But if it's too long, you have to hone it down and make it shorter. It's difficult, being the composer, to lose certain things. You want to keep all the aspects of what you've created. So that gave me discipline in composition, and taught me to say things a lot quicker, rather than belaboring the point. Now, when I listen back to ELP, it did go on quite a lot. God, did we go on! These days, if I've got something to say, I'll play with the composition a long time, and if there's anything superfluous in it, out it goes.

Your style with 3 does seem much more concise than the ELP stuff. Almost everything on the new album is under five minutes long.

Yes. The record company seems to demand these short pieces as potential singles. I see no reason why we couldn't do heavier conceptualized pieces in the second album, but I don't think the time is right for that yet. We're trying to establish a new band, a new identity.

Will you continue to do adaptations of classical pieces in the future?

I don't know. I certainly wouldn't do it just for the hell of it, or because it might be expected of me. I'd be very embarrassed about doing that; it would become almost a caricature. But if I found the right piece of music, one that really inspired me, then I would do it.

So you're listening to new classical pieces?

Yes, but what is new to me wouldn't necessarily be new to other people. My tastes are pretty broad, though. I'm listening to Benjamin Britten at the moment; that's about the newest repertoire. I still like Ginastera. And I've recently discovered Mahler. Somebody once said you're not capable of listening to Mahler until you're 40, so I guess I'm in that category.

It sounds as if you lean toward orchestral composers.

Yeah. But I'm also heavily split between listening to classical and listening to jazz. As far as jazz goes, I'm mainly into Blue Note.

The reissues?

Yeah, but I've also still got a lot of the originals. Recordings like Wynton Kelly with [saxophonist] Hank Mobley [Blue Note, BST-8441, BLP-1574, BST-84431]. Those are great records. That was music from my adolescence. The thing to do was to get your Blue Note album and try to dress the way the musicians dressed on the album cover [*laughs*]. You had to go up to London to get those button-down shirts. It's amazing how music can bring back so many memories.

Your interest in jazz may surprise some readers, since you built your reputation through playing rock.

Well, I wasn't really attracted to rock and roll in those days, because I didn't find the looseness or the freedom in rock that jazz offered. Playing with jazz musicians when I was a teenager taught me to respect the fact that when you play the music and it goes out there in the air, you cannot recreate it. And it showed me that developing the art of improvisation was important. Rock and roll, on the other hand, was very contrived at that time. There wasn't room for experimentation. So I didn't really adhere to rock and roll that quickly. I was attracted by R&B and blues to start off with, because that music did offer the soloist a chance to improvise. Then, of course, with the climate in England in the '60s, when bands like the Yardbirds were around, everything changed. Soul came in, and gradually rock and roll did too. I'm really pleased to see, though, that jazz has not died. There's still a very healthy contingent of jazz players out there, coming up with some really good, interesting, new ideas. And harmony is being brought back into jazz; that's the most important thing. We've gotten away from improvising in various modes just for the hell of it, to try and be different. All that comes a bit heavy with me. I don't like it unless it's got melody and harmony.

Who are you thinking of when you talk about harmonic players?

Dave Grusin, if he counts as a jazz pianist. And Bob James. It's nice music. You put it on, and it's all right. It doesn't have the grit that I liked from the early Blue Note recordings. Nothing could ever recreate that.

Is there a chance that you might do a straight jazz project in the future?

I wouldn't mind that, but again, I wouldn't try to recreate the Blue Note thing, because that's been done. I've been doing a fair bit of jazz recording, though, doing it my way. I wrote a beautiful thing for saxophone, which I'm really pleased with. It's called "Asian Pear" at the moment, named after a fruit that's so juicy, you need a wet suit to eat it. And I recently did a recording of Thelonious Monk's "Rhythm-A-Ning" with a funky rhythm section.

What do you think of Monk?

I like Monk more for his compositions than for his improvisations. The best Monk album for me was *Thelonious Monk At Town Hall.* The previous Monk solos were transcribed for whole sections of the band to play on that album. In fact, I was very fortunate to meet [saxophonist] Art Pepper, who had been on that session. He told me that they had practically no time to rehearse, and it was tricky stuff. On some of it, the band isn't entirely together, but

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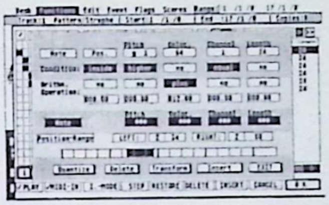

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that adds to the effect. That's the thing with jazz. It's not all clean and tidy. Monk played the way Monk played. I wouldn't want to copy that way myself. In fact, sometimes you feel a little embarrassed when you've got it on in the house. I had Jim Wilson from L.A. Piano Services come by. I happened to have Monk on at the time, and Jim couldn't stand it because the piano was really out of tune. I'd never really noticed it before. I'd just heard the sounds and the solos; that was Monk to me. But it really annoyed Jim, who has a very good ear, so it kind of made me feel embarrassed to be listening to it.

If you were to do a song nowadays like "Take A Pebble," from Emerson, Lake & Palmer, *would you be able to make it work with more of a jazzy approach to the harmony?*

That song was fairly modal, because Greg wrote in a modal style. So experimenting with the chords would destroy the simplicity of the song. Certainly, in the solo section of "Take A Pebble," it was necessary not to go too far from that modal thing. Consequently, I got into the ostinato left hand, and improvised with the right. I still employ that technique quite a lot.

Will you be performing any old ELP or Nice repertoire on the 3 tour?

It's quite possible, but mainly the instrumentals. I wouldn't expect Robert to sing "Lucky Man." I think we'll probably play "Fanfare For The Common Man" [from *Works*], and maybe even "Hoedown" [from *Trilogy*]. There's quite a lot of instrumental ELP that we could choose from.

How do you determine which ones you're going to include in your concert set?

When you've been rehearsing for months, and then you finally get on the road, it's a little difficult when it becomes obvious that perhaps you should have included something that you left out. Then you've got to look for a day off to get the band in for rehearsals. If that happens with 3, we'll have to have another day off so I can write the chords and practice it through with Robert. But we've had a lot of talks with our record company about this. In the past we've also involved people like Lee Abrahams, who went out and surveyed a wide audience, like college students, then came back and said, "Look, if you go on tour, these are the most popular numbers. You should play these." We've had a few surprises: "Oh, they didn't like *that*, did they? We're not going to have to play *that* one!" Obviously, the band does feel strongly about things they do like, so we tend to look at these lists and draw off what happens to suit us at the time.

Will you be doing some individual practice to prepare for the tour as well?

Yes. Usually I take the Korg Sampling Grand [SGX1] everywhere with me—to hotels, in rehearsals, in dressing rooms. I tend to practice more when I'm on the road. My routine consists of running through the Hanon exercises, up to about Number 20.

In preparing an older tune for this tour, will you go back and study your earlier records, or will you start fresh?

I pretty much start fresh, at least when it's introduced to the band for the first time, because I like to see what the new formation is going to offer, particularly when it comes to any improvised sections. After going through that for a week or two, I might refer back to the original and see if there are any elements in the original that we should be including in the new arrangement.

With so many more timbral resources at your disposal now than in the days of ELP, will you be re-orchestrating a lot of the older material?

Actually, I like to stay with the same sound, the same arrangement. But that's very difficult now, with my [Yamaha] GX1 blown up. [*Ed. Note: In our July '86 interview with Emerson, we reported the accidental maiming of Keith's GX1 by a tractor that crashed, out of control, into the barn where he keeps his studio.*] I don't think it will be coming on the road with me. Hopefully I'll be able to get a good sample of it, and use that with everything else. I've actually got two GX1s now. I've got the one I took on the road with Emerson, Lake & Powell; that made it back to England, but it's just unplayable. And, quite by chance, John Paul Jones of Led Zeppelin called up and said, "I've got this piece of furniture hanging around, and I'd like to replace it with a sofa. It's a GX1. You want it?" I thought he was taking the mickey. I was trying to repair mine at that time, and thinking about giving it up entirely because my road manager had been tearing his hair out and saying, "You can't do that!" So I told John Paul Jones, "I don't know. They're a headache. It takes eight people to lift them up. But how much do you want for it?" He said, "I don't know. I'm not in the used car business. How much do you want to give me?" We got into this bartering thing about how much I should pay for a GX1 this day and age, but we settled in the end. When it arrived, we took all the bits out of my old one and transferred them into the new one. It worked for about a week. Then one day I left it switched on in the barn, and went to make myself a sandwich or something in the house. When I came back, there's this pile of smoke hanging over it; I could smell it as I walked in. Burned transistors, or whatever. And that was that. I've got a chap from Yamaha working on it now. Hopefully he'll get it working enough for me to get a reasonable sample out of it.

So what will you be taking out on the road?

Continued

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I'm interested in establishing a keyboard setup that has a traditional look. I don't want all these A-frames standing up on the stage, looking like a keyboard show room. I want traditional instruments, but I want to get the new sounds. I'm looking at getting some expander modules in a rack, and driving those from traditional instruments, such as a MIDIed piano.

Which modules?

Well, I'm currently talking with Korg about getting their DSM-1 expander. Also, with rack-mount [E-mu] Emaxes, I might go back to the original master tapes of some tunes and sample block sounds, which were created with overlaid synths. I've started experimenting with that. This gives the audience an opportunity to hear the exact sound that was on the record. I might see how it works to sample certain things from the 2" master tape, and MIDI that to the actual analog settings I use. Hopefully, that might double the impact.

You'll have an actual MIDIed grand piano onstage?

Yes. I've already got one in England. It's a fine instrument, a Hamburg Steinway, built around 1910. Jim Wilson of L.A. Services MIDIed it up for me. Whether I'll be taking that particular instrument on the road, I don't know. We're hoping to come to an arrangement with Yamaha about using one of theirs. Apart from the piano, I hope to bring the Hammond C-3, which is already MIDIed, although that MIDI system is not working at the moment.

Will you have any other MIDI controllers?

Maybe, if I can get hold of a couple of [Yamaha] KX88s, one on the piano and one on the Hammond. Those would be the only keyboards you'd see.

Why have four master keyboards?

Well, I might not need so many. If I can get away with fewer keyboards at the programming stage, I'll do that. At the moment, I'm going to need possibly two or three of certain expander modules to save pushing a load of buttons in the middle of numbers. If there are two different sounds used on one synthesizer, I'm going to designate them over the two synthesizers and hence eliminate the amount of onstage changes I'll have to make.

You've also been looking at the possibility of taking your old modular Moog synthesizer on the tour.

I called Bob Moog two weeks ago and said I was resurrecting this huge beast he had created in the '60s. Raucous laughter was followed by, "Why?" My roadies keep asking me the same question: "Why do you want to do that to us? First you get the GX1, and now *this*!" But I find it very important to maintain a connection with my roots. I feel the same way about music, and I'm beginning to feel the same way about instruments. People should see what the originator of synthesizers was all about, and that was Bob Moog. It's important to keep that fact alive, because nothing makes the sound of those Moog synthesizers.

When you and Bob Moog were working together on those early synthesizers back in the '60s, did you have any idea how profound an impact electronic keyboards would eventually have in music?

I don't even think that Bob did. In fact, he was quite amazed that I would be taking this modular thing on the road. His idea was that it was built to go in with a recording desk as part of a studio setup. He laughed his head off when he saw me use it onstage, but I think that's what encouraged him to develop his designs a little more. Later on, he created the first polyphonic synthesizer [the Polymoog], but after that I didn't bother to keep up with developments. They were coming so fast and furious that I got a bit bored with it all. I tended to stick with what I knew. I liked the Moog modular unit because of what it represented for me, and because I knew the patchings inside out. It's really funny. I was walking around the NAMM [National Association of Music Merchants] Show in Anaheim, and people were talking to me in this strange language. They obviously thought that I understood every single word. I tried to make myself look intelligent and say, "Oh, of course! I understand that this layering situation produces these timbres . . . " [*laughs*]. It's still a bit foreign to me. Quite honestly, I would prefer to write a new piece of music or practice, rather than pick up a manual and learn

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how to operate a synthesizer.

Clearly, you've found your musical roots and decided to stick with them.

This is important. I've known a lot of good players in England who don't even play anymore. They've ended up as programmers.

Because that's where the money is?

Yes. They start off as players—good players, too—but that isn't necessary anymore because they just let sequencers do it: "Why didn't you *play* that?" "Oh, I haven't played anything for years." That's very sad. They've become good at programming, mind you, but it's still a shame to have lost that talent.

Well, you seem in no danger of following the trendy path. There are plenty of new timbres on Three, *but many of the ones that stand out are the tried and true Emerson sounds.*

I view it as painting a picture. You stand back, look at the canvas, and say, "There's a bit too much red there." Or not enough of it. The instrumentation goes hand in hand with whatever is needed. Obviously I'll always go first for the traditional instrument. If I can get the Hammond in there and it sounds okay, then we'll use it. Sometimes the Hammond is best left out, and I'll have the modern instruments come in and do the job.

Your distinctive heroic trumpet-like synth lead line sound is also evident all over the new album.

Actually, I wanted to better the original GX1 sound by use of MIDI. A lot of keyboards are mashed together to get that sound. It's a delicate balance of different things. In fact, I'm in the process of coming to a deal with a company in California on getting my own set of patches done, the Keith Emerson Patches, which I'll be using for the tour. They'll be available for sale after that. [*Ed. Note: At press time, negotiations were still underway between Emerson and the company in question, Eye And I Productions, for creation of patches for the 3 tour, and their subsequent commercial sale. A representative for Eye And I told us that they were scheduled to begin programming Keith's Roland D-50 in March. We'll let you know when and if the Emerson patches are made available.*] I really need to get my own identifiable sound again, now that I've lost the GX1. It's like Eric Clapton's guitar; nobody sounds like that. I think I've managed to do something along those lines on this record. The way it stands at the moment, it is possible for anyone to get exactly these sounds themselves, but I'm hoping to develop a relationship with this company to come up with sounds that won't be so readily available.

That breathy sound at the beginning of "You Do Or You Don't" sounds rather familiar.

Yes, that's the Roland D-50. There's quite a lot of it on this album. I love the D-50.

Have you done much programming on it?

I did try messing around with the factory programs on the D-50, but quite honestly I didn't manage to change them too far away from the originals.

Did you make much use of the D-50's digital effects on the album?

Not really. We tended to use what was in the studio. The problem is, when you get to the mixing stage and you suddenly find that something has a repeat on it, you might not need it. If there was delay or chorusing on the D-50, we'd generally take it off and wait until we got into the mix. In general, we found ourselves taking things off rather than adding things.

Did you use many sampled sounds on Three?

There were some sampled sounds from the [Korg] DSS-1. I did get hold of some samples which were not exactly factory sounds, particularly at the end of "Chains." Although you don't hear it very clearly, there's a brilliant sample there of a big full church organ. It's not one of the factory samples; it was supplied to me by a guy called Jed, who works at Rose Morris, a retail store in England. On some occasions I made some alterations to the sample, but I didn't actually get into sampling other instruments and all that. I tended to make a lot more use of what was available to me at that time.

What did you use for that big brass sound on "Eight Miles High"?

It was a combination of things, probably the [Oberheim] Matrix MIDIed to the

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[Yamaha] TX816 and the DSS-1, as far as I can remember. I found that solo at the end quite fun. I could have gone on all night, playing different solos, but I sort of fell in love with the one that's on the record.

Was it hard to take a song like "Eight Miles High," one that's so familiar to listeners, and come up with an original arrangement?

Well, of course, "Eight Miles High" is a classic. But so is *Pictures At An Exhibition*. I found it interesting to deal with a classic from the rock and roll era. Basically, the arrangement started from a rhythm that I created on a drum machine; I think Robert may have added an accent here and there after I got it going. Then the brass riff came out of that.

That riff was based on Roger McGuinn's 12-string guitar solo on the Byrds' original recording of the tune.

Right. That needed a bit of playing around with, because McGuinn's solo is very free-flowing. It sort of goes across the beat; after he plays the theme, there's a whole splunge of notes. So we worked that around.

How else did you use the TX816?

I found a very interesting combination with one of the sounds in the TX816. It blended very well with the MIDIed Bösendorfer. You can hear it on the piano solo in "Desde La Vida." I also brought out the percussiveness of the piano by MIDIing it to a Kurzweil 250 and using a marimba sound. On some occasions, I even MIDIed it to the Korg Sampling Grand.

Your piano introduction to "On My Way Home" seems to evoke almost a new age feeling.

That was real piano too, but that wasn't really an intro. In fact, the piano plays the theme, then the chorus comes in, and it's basically A-B-A-B all the way through. When I wrote the piano passage out, I stuck an extra chorus and some other modulations in too.

You transcribed your own performance off the record?

That's right. I get enjoyment from that. In fact, you guys started me off on this! You wanted a variation on "Good King Wenceslas" [published in *Keyboard*, Dec. '79]. I hadn't really gotten into that before, but I had a lot of fun. Since then, I do that a lot more with my own pieces. I'll listen to what I've recorded and say, "The fact that I can play it that way is good, but maybe there's some other way to play it too." I had a good go at one of Hoagy Carmichael's songs, "Skylark." I wrote an interesting arrangement of that. I used to play it in a pub [*laughs*].

Have you tried working with music printing software?

I've tried that. Somebody had a program in a Mac, but it didn't function very well. I don't know whether there was something wrong with the program or with my computer. I've yet to really try that idea out, but I really feel a lot happier using manuscript paper and a pencil. In the same way, I don't think I'd use a word processor to write a letter. I'd prefer to sketch out a rough letter with a pencil, then write it properly.

Much of the discipline in your arrangements must come from the concentration of working directly on paper.

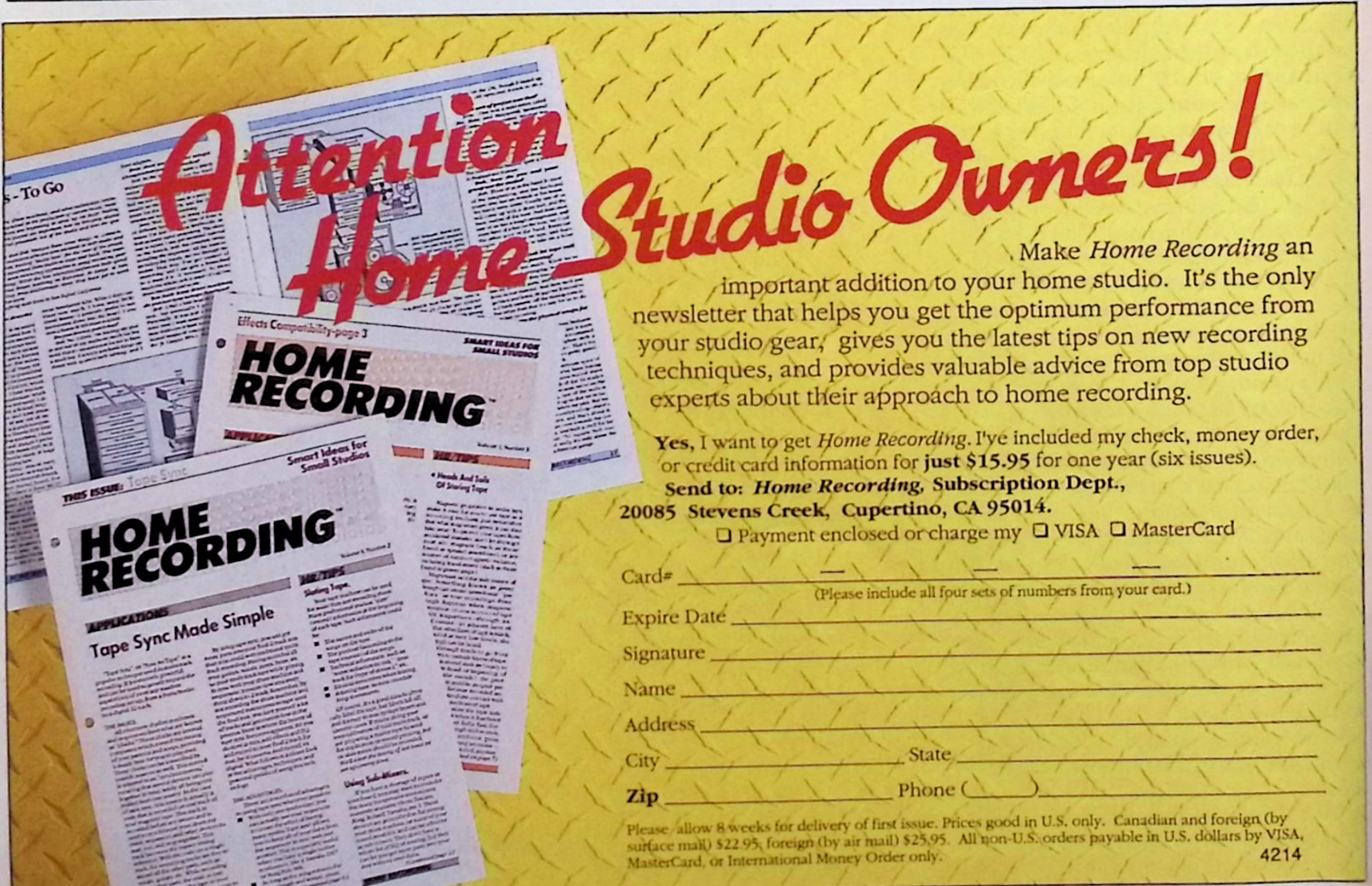
That's right. I can also get it done a lot quicker that way, rather than having to learn how to operate something, using the mouse around the Macintosh and all that. I can't do that. Some people have adapted to it, but me, no way.

Have you transcribed the entire 3 album?

Yeah. I wrote it all out so that I could see on paper all the different lines I had put down on the record, and figure out how I could cope with them in a live situation, to see what I could designate to which hand, and whether it was possible to get around it all. What I need now is a good programmer to put all that together.

Will you have to store some parts in a sequencer for the stage show?

I'm most anxious to play as much as possible, without putting anything into a sequencer. But the end of the "Eight Miles High" arrangement comes to mind. I play the Korg remote keyboard there, so I need the left hand to use the pitch-bend. I'd like



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to build my rig so that there are a lot of controls, such as maybe foot controls for pitch-bending so that I can use my left hand for other things. Still, I'm going to have to concentrate fully on that solo, so I guess the brass riff is going to have to be sequenced behind it. We've been talking about sequencing that line. Not having done that before, it will be an interesting experiment. Perhaps we'll have a guitar player who might be able to double on keyboards and do it himself.

So you'll be augmenting the trio with other musicians onstage?

Well, we didn't want to leave it at the trio format. It was important to form the nucleus of the band and then augment it for touring purposes. We're taking two or three girl singers and another guitarist on the road, although we haven't quite made a decision on the guitarist yet.

With Robert in the band, there's already much more guitar than there was with any of your previous groups. Did that affect your approach to voicings, timbres, and arrangement for the keyboards?

It didn't affect me at all, because the keyboards and drums were put down first. We wanted to give the music a different ingredient than what ELP had. Hence, the uitar. The keyboards cannot make that ort of sound for this sort of music. The guitars were brought in to heavy it up.

Carl's drum sound seems much bigger than in the ELP records, and his playing is much less busy.

Yes. At times with ELP, Carl was possibly a little too busy, but that was necessary at the time. He started changing his drum style around the time he was with Asia, where it became necessary to be more simplified than he had been with ELP. I guess this is just a continuation of the style he adopted for Asia, which is also quite suitable for us. As far as the drum sound is concerned, Carl got that by triggering a Dynacord.

Did you and Carl record the basic tracks to a click?

We did use a click, although we lifted it in some places.

If you do use sequences onstage, how will that affect the band's approach to tempo?

Well, we've just recently got hold of the Kahler Human Clock, which keeps sequences right with you as you speed up, as long as the drummer is playing a consistent backbeat. That's the theory of it; whether it actually works in practice, we're going to have to see.

How are bass lines handled with 3?

The bass is all done by Robert. He is quite an inventive bass player, not at all pedestrian. It wasn't really necessary to discuss bass lines with him. He likes to use a lot of passing notes to get around the chord changes, which makes it a little more interesting.

Looking back on the many projects you've been involved with over the years, what is it that makes 3 unique?

Well, the main thing is that I've not really worked with this context before. In fact, this is the most commercial context I've been involved with in my career. I'm now at a position in my life where I've played classical music with symphony orchestras, I've played jazz with jazz musicians, and I've played blues with blues musicians, like [guitarist] T-Bone Walker. I think it's now time to discover pop music, and treat it exactly as I treat the classics, jazz, and the blues—as the art form that it is. ■

FOR FURTHER READING

For previous interviews with Keith Emerson, see *Keyboard*, Oct. '77, Sept. '80, and July '86. Musical arrangements for keyboard by Emerson ran in the Sept. '82 and Feb. '84 issues. Also, many of the artists mentioned in this article have been interviewed or profiled in *Keyboard*: Dave Grusin (Apr. '79), Bob James (Jan. '82, Apr. '88), John Paul Jones (Dec. '77), Wynton Kelly (June '83), Robert Lamm of Chicago (July '79), Thelonious Monk (July '82), Bob Moog (Sept./Oct. '75, frequent columns in *Keyboard* since 1975).

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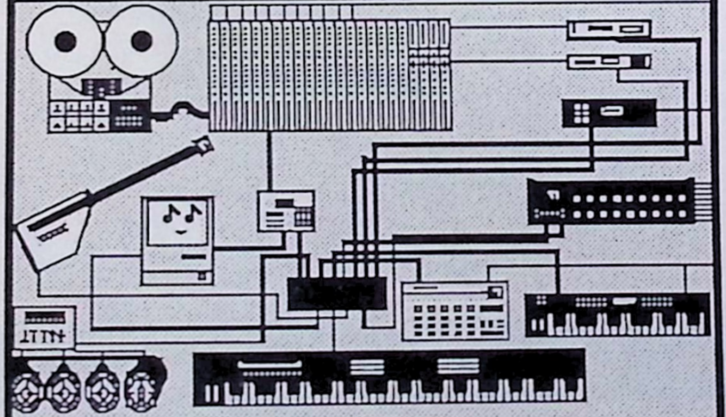

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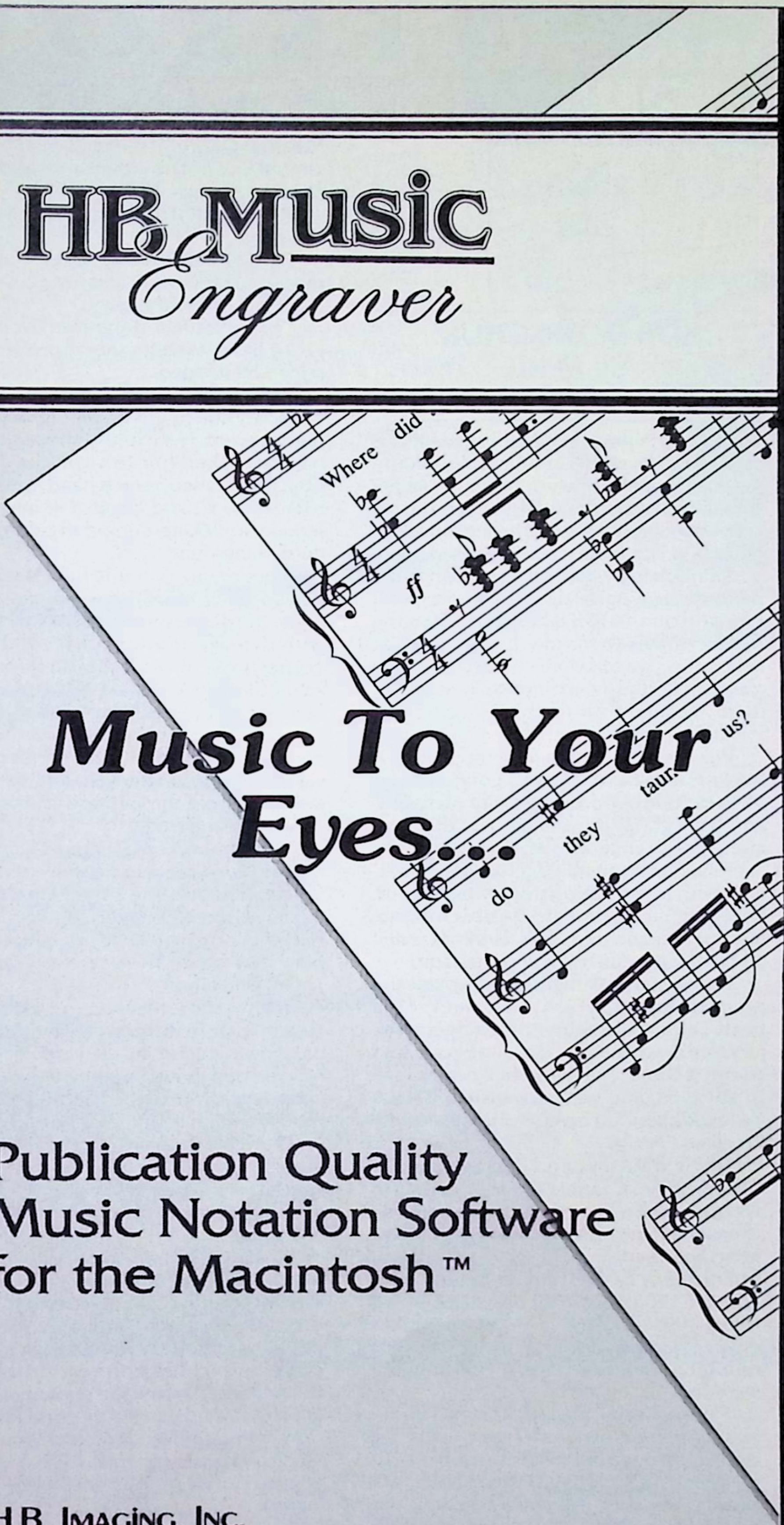

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AN APRIL TALE

TRUE, IT WAS ONE IN THE MORNING, so you could say I was tired. I had plastered a professional smile onto my face, which was aimed toward a well-known society *grande dame*. She was sitting next to me, her linebacker frame inching closer moment by moment, forcing me to teeter on the edge of my piano bench and concentrate more on balance than on rational discourse. Her necklaces gleamed in the spotlight; with each breath, I was fogging enough jewelry to pay off my mortgage. I had already accompanied her sodden contralto on three choruses of "Send In The Clowns," and now she had launched into a speech about a project her husband, a wealthy patron of saloon entertainers, had hatched. So when she invited me to chair the jury at the first annual Eddy Duchin International Lounge Piano Competition, against my better judgment, I grinned even more painfully and purred, "How could I say no?"

Mrs. Tycoon clapped her hands, clicking ring against ring and nearly upsetting the Grande Marnier she had perched next to my tip jar. "That's wonderful," she cried. "My husband will be thrilled. He loves your music. 'm sure you remember the night he discovered you last year; it was a Sunday. . .

Though my jaw was aching, I clenched politely while Mrs. Tycoon warbled on. I didn't have the heart to tell her that people "discover" me every weekend here at the Lizard Lounge. Or that I actually never worked here on Sundays. Or, especially, that I was beginning to get alarmed at the idea of presiding over a competition of lounge pianists.

The more I thought about it, the more unworkable the idea seemed. Mrs. Tycoon's ideas were modelled on the great classical piano contests. A concert hall. A choice of perfectly maintained grand pianos. A prestigious jury, which would listen with sober detachment and complete concentration.

As we all know, that's about as far from your typical club atmosphere as you can get. The more Mrs. Tycoon's proposal filtered through to me, the more I realized that it simply would not do. If the purpose of the competition was to measure each player's effectiveness as a lounge musician, some radical revisions would have to be made.

To my surprise, Mrs. T. agreed with me. I went to work, finding the right place, lining up the right talent, and putting the right panel of judges together. When the Duchin Competition finally convened about a year later, everything seemed copacetic.

The Hi-Ball Hideaway was the perfect site, large enough to accommodate our audience, yet intimate enough for our purposes. We had to specially prepare the piano: a couple of vodka tonics over the bass strings to get that tubby resonance that's so hard to find in concert grands, one or two clipped strings in the treble range, and the *coup de grace*, a sluggish B♭ key. The audience was arranged at tables around the instrument. A card had been placed at each table, informing attendees of the two-drink minimum per round, and encouraging them to keep up the conversational buzz; suggested topics and, if necessary, complete scripts were provided, outlining dialogs based on discovering their partner's astrological signs. A volume meter hung on one wall, flashing red when the noise level dipped too low. In case of persistent silence, waiters were instructed to drop glasses or bottles, which inevitably triggered more applause than the pianist could reasonably expect.

We came up with a few novel format twists too. Where classical competitions often include performances with orchestra, one highlight at the Duchin was the singalong endurance test, featuring a hearty baritone quartet supplied by the local Shriners. And, at my suggestion, Mrs. Tycoon herself agreed to provide the bench nudge test; for insurance purposes, cushions rested on the floor to catch falling contestants.

The crucial challenge, however, was the request section, which we saved for the finals. During this segment, members of the jury filed down to the piano, one by one, and placed requests. The tunes were determined in advance, and we were brutal. "Tie A Yellow Ribbon." "Theme From *Love Story*." "Feelings."

Finally, it was my turn. I decided to ask for "Theme From *Chariots Of Fire*," mainly to see how much mileage one can get from one chord and four notes over 16 bars. My fellow jurors approved this choice, but one of them, a particularly cynical fern bar veteran who built her reputation playing in a cage over Henry Africa's in San Francisco, insisted that I rag my contestant for failing to make her rendition sound like the original Vangelis recording.

I looked at my program. The next pianist was a young woman from Taiwan, working her way through Berklee with a job in a bar near Boston's Copley Square. She was already at the piano, demurely dressed, long black hair hanging straight down her back, hands nervously clasped in her lap.

"I can't do this," I said to Ms. Africa.

"Look," she hissed through the cigarette smoke being pumped through the grate above the jury's heads, "this is a tough business. Sooner or later, we all have to play 'Chariots Of Fire.' If she can't cut it, better she should find out now than at an audition for Dave McKenna's off nights."

Reluctantly, I nodded. I knew Ms. Africa was right.

Pushing past waiters now gleefully crashing trays against walls and even customers, I made my way to the piano.

"Mary Soong?" I shouted over the din. Fixing her eyes with some apprehension on mine, she nodded.

"Let's hear 'Chariots Of Fire.'"

Slowly she nodded, then turned toward the keyboard. Her expression was grim, as if I had just asked her to swim to Mainland China. She raised her left hand, positioned it over a low C, and began the introductory sequence: "*Dung*-dung-dung-dung, *dung*-dung-dung-dung . . ."

My next move should have been to start harassing her, demanding why she couldn't make the piano sound just like the record, with swooshing wind noises and soaring orchestral timbres. I should have started acting like a jerk. But as I watched her work, blocking out the colliding waiters and slurring Virgos, concentrating on those four notes as if they encapsulated all the melodic vigor of *Porgy And Bess*, I lost my resolve. My task, the whole competition itself, suddenly seemed unimportant.

"Ms. Soong," I whispered. "Don't do it."

She didn't seem to hear.

I leaned over the keys. "Don't do it," I repeated, more urgently. "You don't need a bar gig. You can get a scholarship. You can play real jazz. Or even classical music! There's still time."

Finally, she looked up and met my gaze. Her delicate features were smiling now—a dazzling frozen smile, the kind I'd flashed at Mrs. Tycoon those many nights before at the Lizard. Without missing an arpeggio, she spoke through happy gnashing teeth.

"Hey! No problem! You're looking great tonight, mister! How about a little something special for the missus?" With a flourish, she swept up a couple of keys and breezed into "Memory."

Ms. Soong was the hands-down winner of the Duchin Competition. Like violinists saluting a great performer with taps of their bows, the judges and audience acclaimed her with swizzle sticks tinkling against martini glasses. Mary has gone on to bigger and better things. In fact, she's got my old Friday gig at the Lizard. I spend those nights at home now, transcribing old Frankie Carle records, so if you stop by the Lizard, give Mary my regards. By the way, her first night is April 1.

Bob Doerschuk is an associate editor at Keyboard Magazine. *He also plays solo piano three nights a week at MacArthur Park, a popular restaurant in Palo Alto, California, and on most Saturdays at Harry's Bar in San Francisco.*

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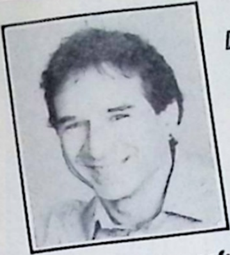

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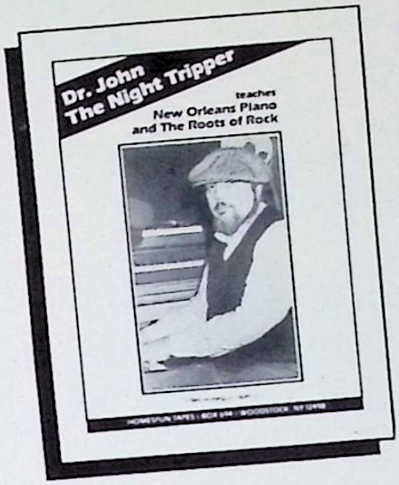

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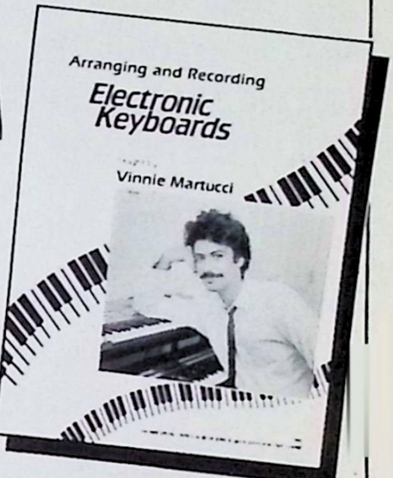

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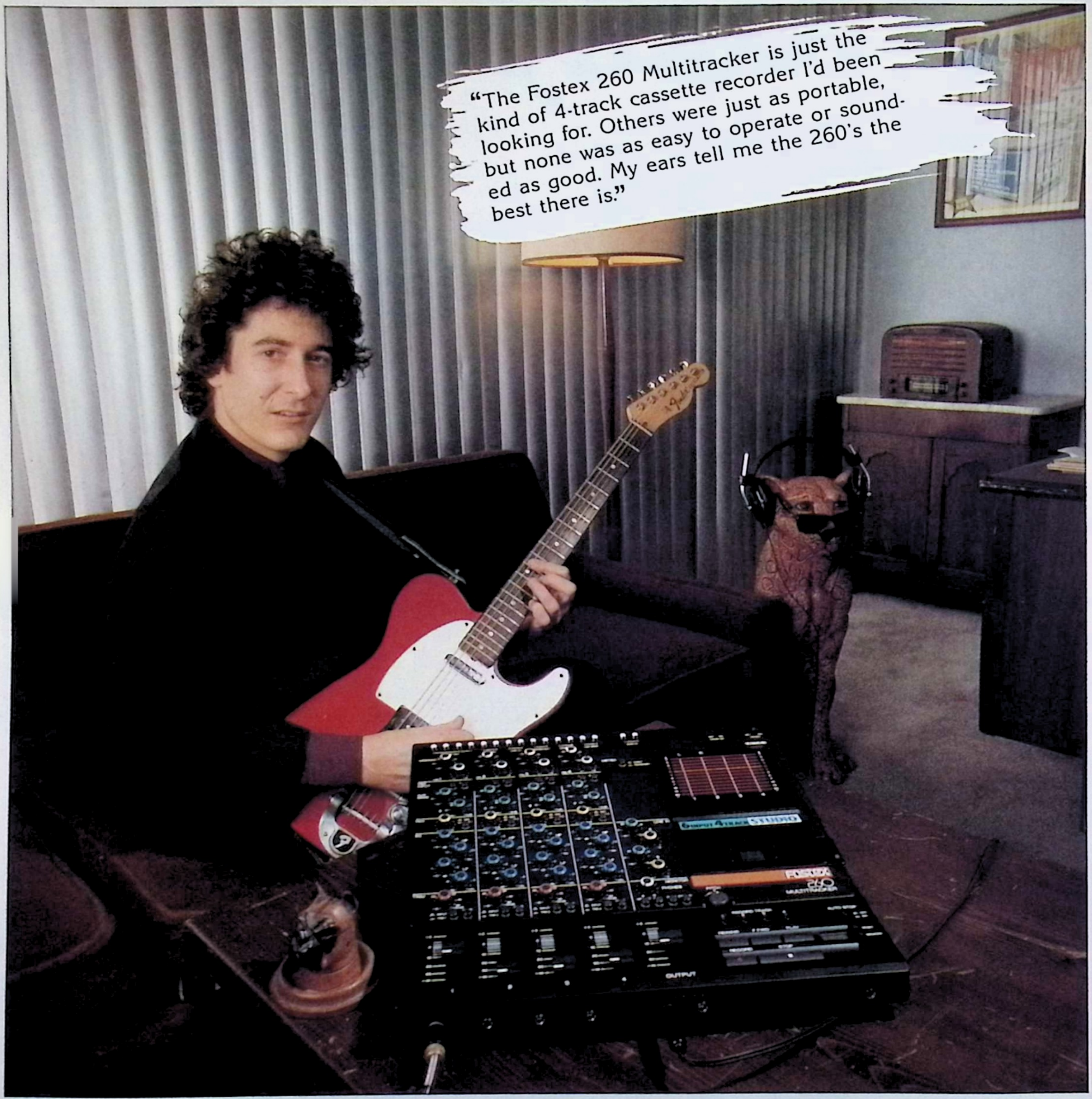

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PRIVATE LESSON

TECHNIQUE

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THE LEGATO THIRD

THE THIRD, THE BUILDING BLOCK OF the triad, can fit effectively almost anywhere in keyboard textures. Yet technique books don't even go beyond asking you to play one or two fingerings for diatonic and chromatic scales. So this month we'll look at playing thirds in musical contexts.

The issue of fingering comes down to considerations of articulation and the types of intervals that are involved in voice movement. Staccato passages can be handled with a variety of fingerings, taking arm motion into consideration. Here, however, we are focusing on playing legato, which is usually bound up with phrase design. Motion by seconds produces scales, and the fingering considerations are those of connectedness and thumb placement; thirds yield arpeggios, and this means handling repeated notes well; larger intervals require hand stretching or shifting of the arm.

First, let's review the possibilities for diatonic and chromatic scales. Ex. 1 begins with the standard repeating octave fingering, which for keys of fewer than five sharps or flats always allows thumbs to stay off of black keys. (For those less well-travelled keys, there will be spots, possibly requiring special attention, that force the thumb to move to or from black keys.) The remaining fingerings show other approaches you should try, such as fingerings repeated every two, four, or five notes. Ex. 2 looks at legato fingerings for chromatic minor thirds and major thirds. The

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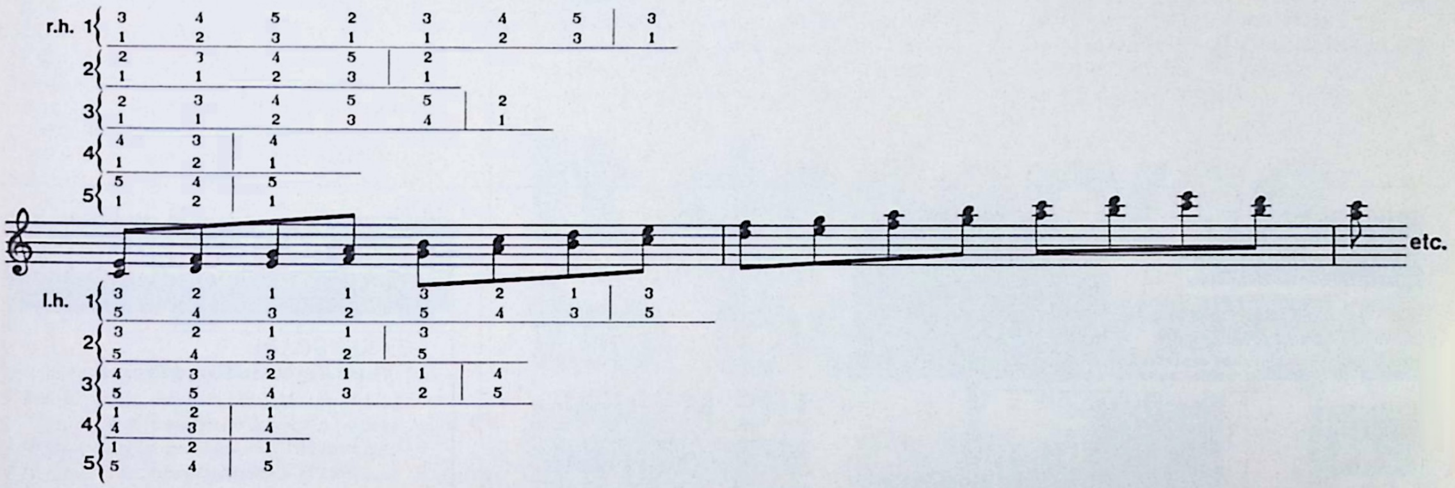
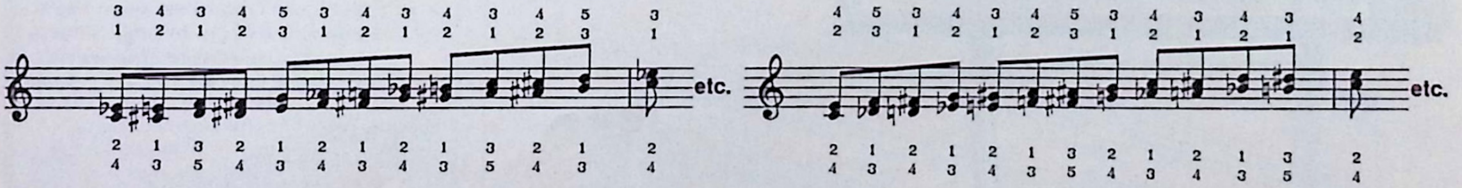
Jeff Pressing is a senior lecturer in music at La Trobe University in Australia. He has recorded several albums as a jazz pianist.

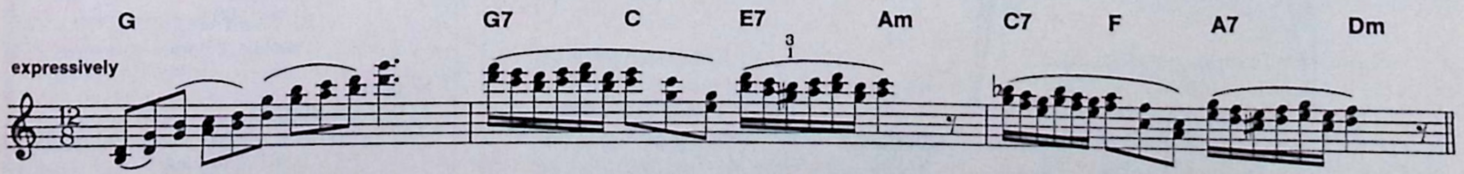
Ex. 1. Some fingerings for thirds, repeating after the vertical line.



Ex. 2. Minor and major thirds.



Ex. 3. Fingerings may be decided according to articulation.

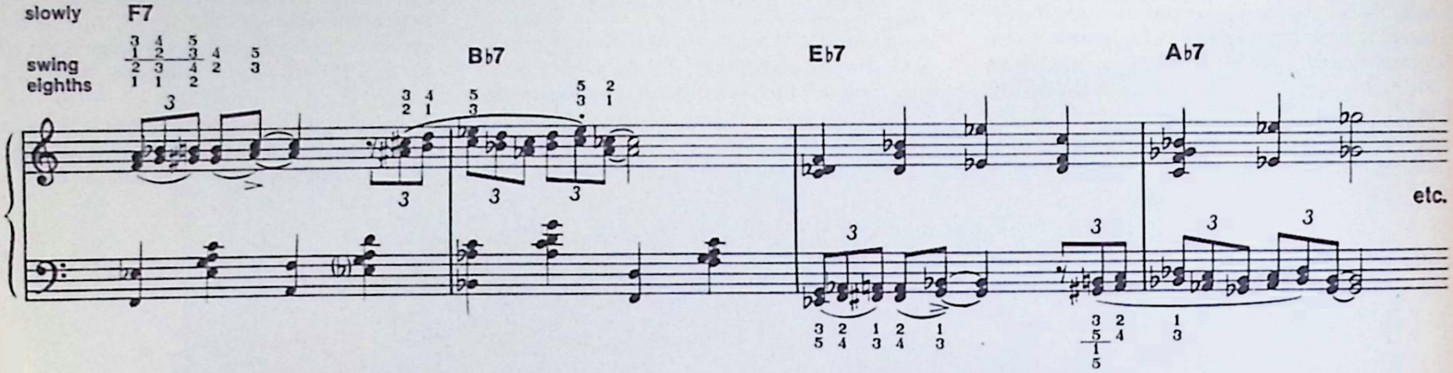


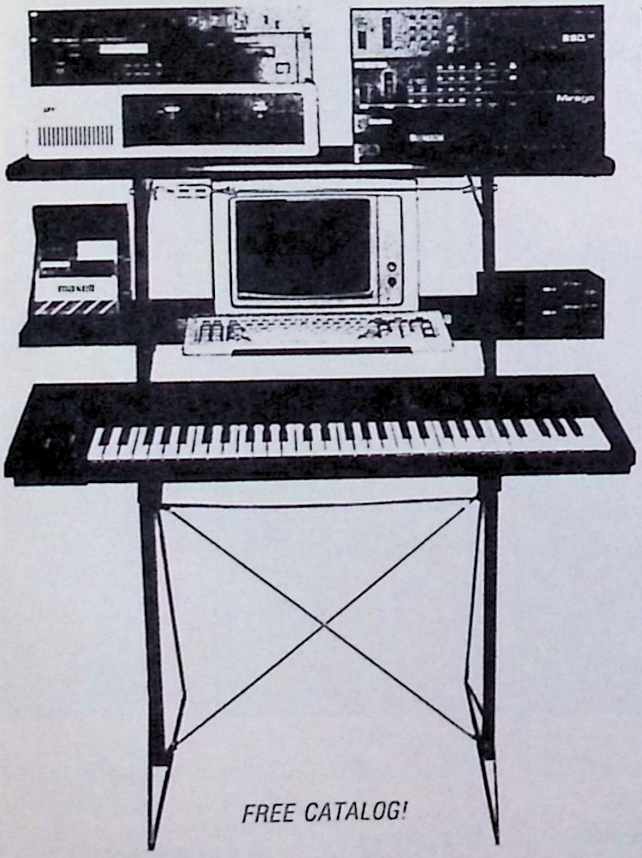
same fingering applies to ascent and descent.

Ex. 3, which is for either hand, leaves the options open to you, but the articulation should drive you to a solution in one of several natural ways. The problem, if there is one, is to coordinate the articulations of the repeating notes and those that move by leap. It is often better to change fingers, to help keep the hand motion natural, although some players may prefer to repeat fingers to keep a more fixed hand position. Caveat emptor.

Ex. 4 shows a bluesy, chromatic third motive that alternates between hands and moves around the Circle of Fifths. This example features an inverted stride accompaniment when the left hand has the melody. The move to *Db* requires that the pattern be shifted up an octave. You are urged to complete the example yourself. Overall, the choice of fingering should always make natural the interpretation you want to give the music. Any remaining leeway should be used to personalize the material to your own hand and thinking to increase your ability to be relaxed in performance. ■

Ex. 4. A chromatic third motive that moves around the Circle of Fifths.





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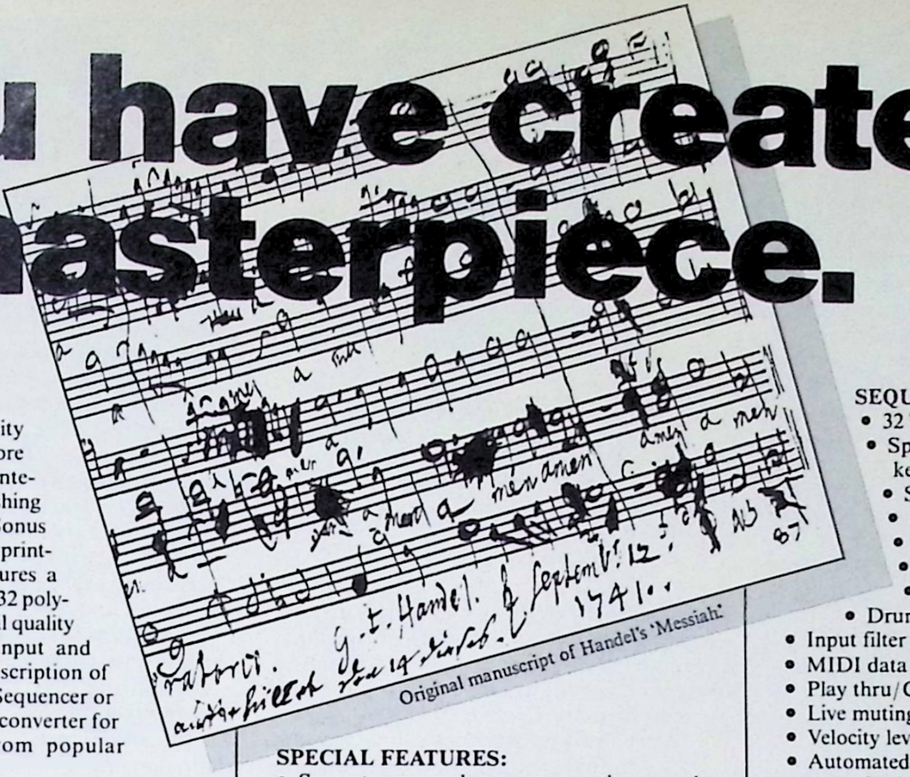

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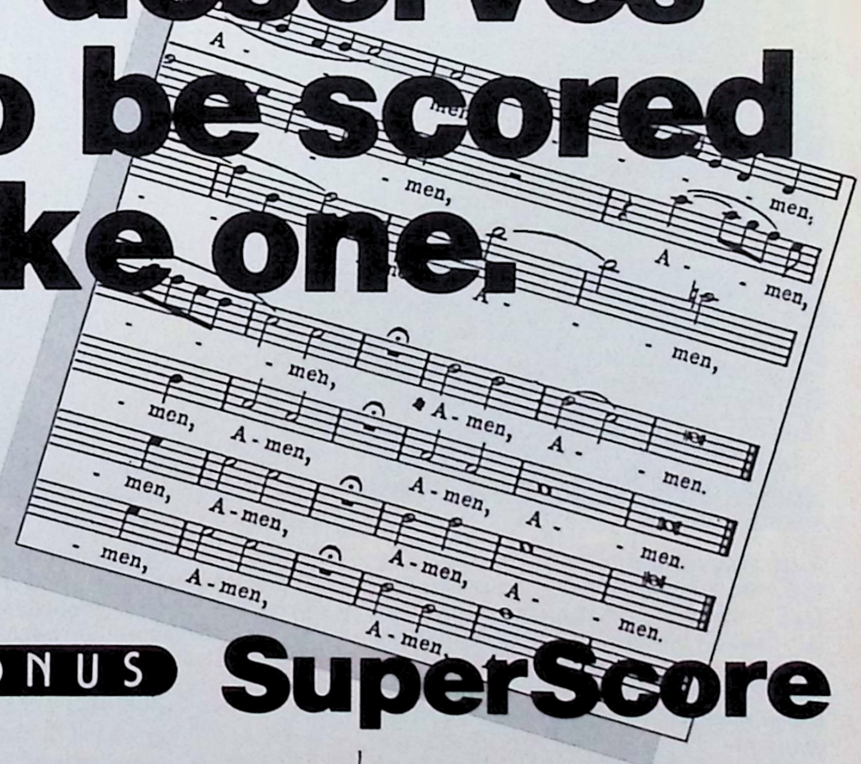

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PRIVATE LESSON

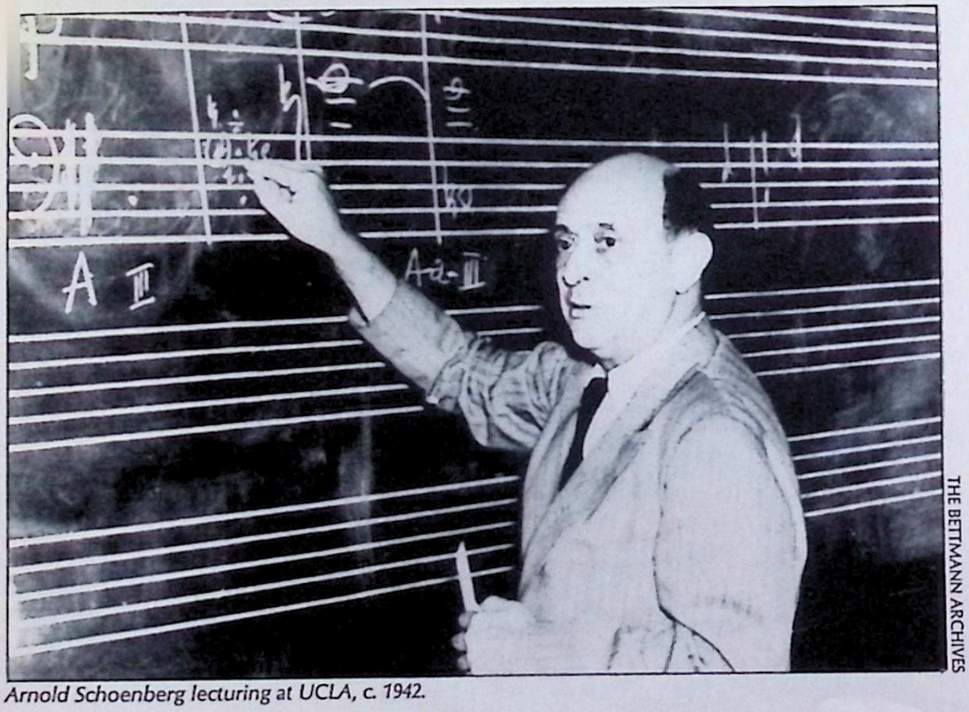
CONTEMPORARY PIANO

DAVID BURGE

SCHOENBERG'S STROKE OF GENIUS: THE TWELVE-TONE SYSTEM

THE FIRST TWO DECADES OF THIS CENtury were a time of extraordinary creativity among composers. During the past several months we have been examining the piano music of the 1920s, particularly that of two of the greatest composers of the time, Béla Bartók and Igor Stravinsky. Earlier in this series of columns we compared the music of three men who were among the most original composers of the first 20 years: Claude Debussy, Charles Ives, and Arnold Schoenberg. Of the three, only Schoenberg was able to be musically productive after the close of World War I; Debussy died of cancer in 1918, and Ives became incapacitated at about the same time and was unable to compose thereafter.

For Schoenberg, too, it was a difficult period. The war, of course, had a devastating impact, but even if he had not been so disturbed by it, he might still have been forced to pause. He knew that he had already accomplished much, yet he was dissatisfied with the intellectual underpinnings of his work. He felt that, historically and artistically, it was a logical and necessary step to reject functional tonality. In the early piano pieces, Op. 11, and the works that followed, he had done so. But he believed that music that was simply "non-tonal," with no organizing principles beyond the composer's pleasure, was too irrational, too subjective, and—perhaps above all—too negative to carry on the central European tradition that he revered and considered himself part of. It was of the utmost importance that some kind of logical and intellectually satisfying organizing principle be developed to replace what had been the all-embracing authority of tonality. That principle had to be one that allowed for personal flexibility, just as tonality had done over the centuries. It had to be a procedural guide to composing and a consolidating system that might serve as an aid to its comprehension.



THE BETTMANN ARCHIVES

Arnold Schoenberg lecturing at UCLA, c. 1942.

What slowly emerged, of course, was the twelve-tone method, a way of organizing total chromaticism in a consistent manner. Readers unfamiliar with the nitty-gritty of this much-discussed "dodecaphonic" method can find information in countless books and articles, but for short, thoughtful commentary, I suggest either Eric Salzman's *Twentieth-Century Music: An Introduction* [Prentice-Hall, 1967], chapter ten, "The Viennese School," or Charles Rosen's *Arnold Schoenberg* [Viking Press, 1975], chapter four, "Serialism And Neoclassicism." For the more adventurous, there is also George Perle's fine *Serial Composition And Atonality* [University of California Press, 1969]. I will not go over the same ground.

I would, however, like to add a few words to what has been written to dispel the stigma that is still attached, in the minds of many performers and listeners, to twelve-tone music. I cite, for example, a portion of a review written in the mid-1980s, sixty years after Schoenberg published his first twelve-tone compositions. The review concerns the recording of a new work for piano, but that is of little importance compared to the attitude of the critic. "Most remarkable is the fact that though the work sounds so poetical and personal, some of the [movements] *actually contain passages of strict dodecaphonic writing*" (italics added). The implication is that the twelve-tone method is so mechanistic that music based on it hasn't a chance of containing real poetry!

Unfortunately, this is not an uncommon viewpoint. As a consequence, I have found myself increasingly avoiding—over the several decades that I have been performing, teaching, lecturing, and writing about twentieth-century music—mentioning that a certain piece is "twelve-tone." Instead, I have tried to highlight aspects of the piece that evoke its inner expressiveness. This expressiveness is in no way *dependent* on the compositional techniques involved. Just as composers in the eighteenth and nineteenth centuries did not have the success of their works guaranteed by writing in a certain key, twelve-tone composers have a technique at their disposal that may facilitate achieving their musical goals but can never assure them that they will do so. In short, there is beautiful twelve-tone music and there is ugly twelve-tone music; it can be poetic, academic, enthralling, or tedious. In this respect, it is exactly like music written in any style at any time, which is why I cannot understand the particular virulence with which it is still attacked, shunned, and worst of all, patronized by so many musicians, critics, and listeners.

With this said, it now must be added that Schoenberg's discovery became, by mid-century, the most important and influential compositional procedure of the century. It spawned the many theories and sub-theories associated with what is called "serialism." That the twelve-tone method—rather than Debussy's Impressionism, Stravinsky's Neoclassicism, or Bartók's use of folk elements—should become the most compelling source of basic compositional techniques for so many decades is proof of its flexibility and artistic usefulness, even in the face of the disdain and distrust that it still elicits.

But Schoenberg did not leave only a theory behind; he also wrote music, and two of the first three works employing the twelve-tone method are for solo piano. They are the *Five Piano Pieces*, Op. 23 (1923), and the *Suite*, Op. 25 (1923). Next month we will take a look at these two very different compositions. ■

David Burge is a professor at the Eastman School of Music.

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PRIVATE LESSON

APPLIED THEORY

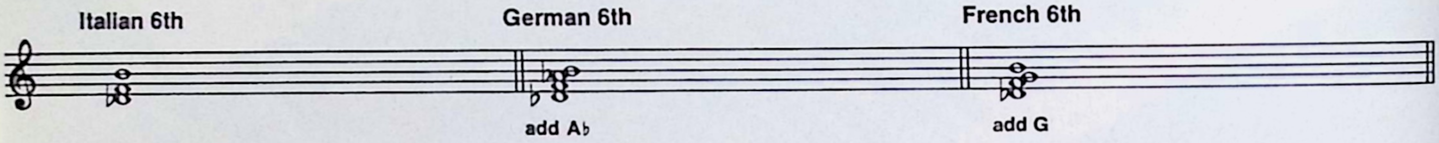
WILLIAM L. FOWLER

AUGMENTED 6th CHORDS, PART I

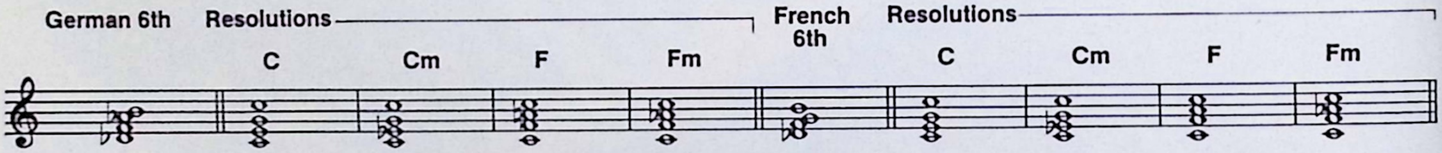
SQUEEZE AN OCTAVE; OUT POPS AN augmented 6th. Squeeze octave C's to make the augmented 6th *D♭-B*; squeeze octave G's to make the augmented 6th *A♭-F#*; or squeeze any octave built on any scale note to produce another augmented 6th. But augmented 6ths don't want to stay squeezed. Like compressed rubber balls, they want to spring back to their parent octaves. The augmented 6th *D♭-B*, for example, urges resolution back to octave C's. Both notes in an augmented 6th interval lie one half-step inside their parent octave and tend to resolve outward to that octave. But a bared augmented 6th interval, say *D♭-B*, sounds biting: It begs for an added note to sweeten its raw dissonance. Accordingly, seventeenth-century Italians added an internal note (*F*) a major 3rd above the bottom augmented 6th note (*D♭*), thus creating a three-note chord (*D♭-F-B*) with a sweetening major 3rd (*D♭-F*) between the bottom two notes and an energizing augmented 4th tritone (*F-B*) between the top two notes. By the same means of adding a major 3rd, other augmented 6th intervals become Italian 6th chords. Augmented 6th *E♭-C#* becomes Italian 6th *E♭-G-C#*, augmented 6th *F-D#* becomes Italian 6th *F-A-D#*, and so on.

Because it contains a dual harmonic drive (its augmented 4th coupled with its augmented 6th) tempered by a sweetening agent, the Italian 6th makes a potent three-note chord from which to build larger, even more potent augmented 6th structures, structures like the German 6th, the French 6th, and a variety of others yet unnamed. This month we look at the German and French 6ths, the two traditional four-note augmented 6ths. Stay tuned for next month, when we'll look at the non-traditional four-note and larger augmented 6ths. ■

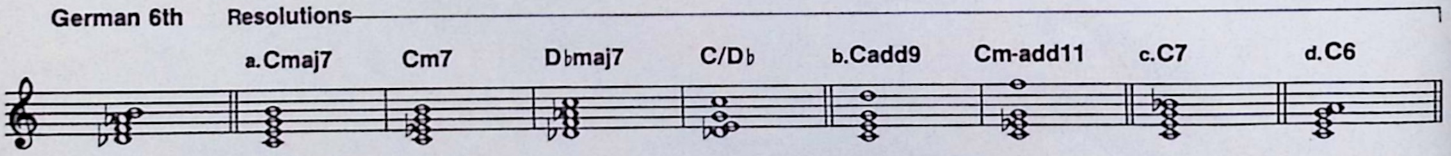
William L. Fowler is a music professor at the University of Colorado at Denver and the author of several books on music.



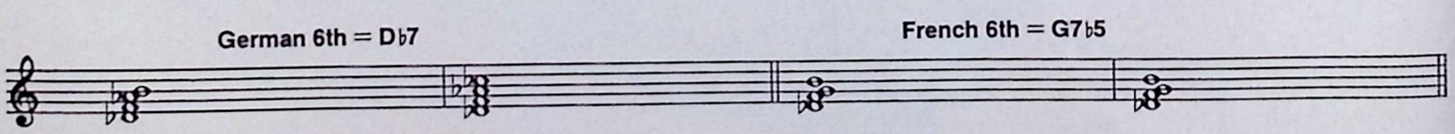
Ex. 1. In the German 6th, an added perfect 5th above the bottom note of the Italian 6th smooths and solidifies the sound. But in the French 6th, an added augmented 4th above the bottom note of the Italian 6th roughens and fragments the sound. This intensifies the harmonic energy because there are now two tritones, D♭-G and F-B, instead of only one.



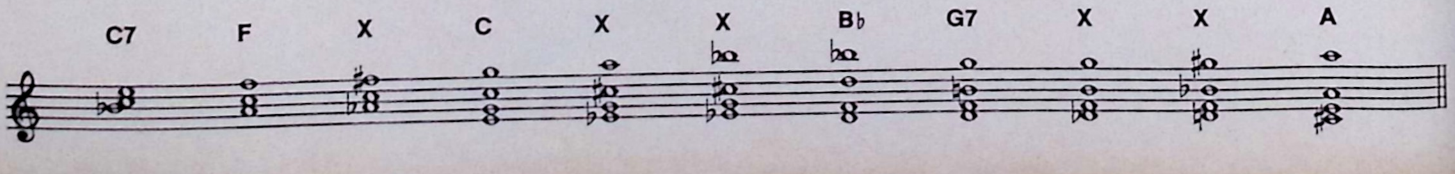
Ex. 2. In traditional resolutions of German and French 6th chords, the notes of each augmented 6th interval expand to an octave.



Ex. 3. In non-traditional resolutions of German and French 6ths, one note of the augmented 6th interval resolves in the traditional half-step movement, while the other does not. This non-resolving note might not hold over (a), might leap (b), or might move by half-step (c) or whole-step (d) in the direction opposite its tendency.



Ex. 4. German 6ths look like misspelled tritone substitute dominant 7th chords. French 6ths look like second-inversion dominant 7♭5 chords.



Ex. 5. Name the types of augmented 6th chords indicated by X.

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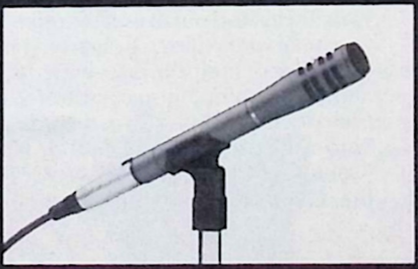

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PRIVATE LESSON

JAZZ PIANO

ANDY LAVERNE

99 WAYS TO REDISCOVER YOUR EARS

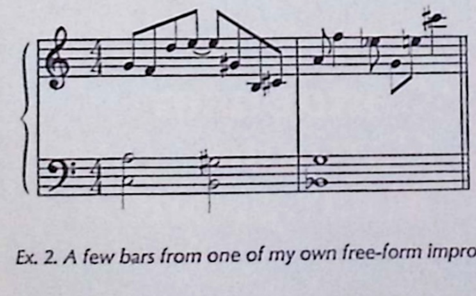
> **'In the last decade, there has been little stylistic development in jazz. By returning to a looser approach such as ear playing, we are opening the door to real development.'**

JAZZ EDUCATION HAS BECOME QUITE sophisticated over the past few years. For aspiring pianists, there are method books covering scales, voicings, styles, and everything in between. Several books have been published of solo transcriptions by leading artists. There is a growing reserve of performances and instruction on video, and high-quality recordings of jazz artists are available on cassette, LP, and CD. With all this data, the intellect tends to be used almost to the point of exhaustion. In the old days, which were not so long ago, music was learned in a more rudimentary, hands-on manner. Information was passed from one generation of players to the next, and the medium of this transfer was live performance. Unlike today's theoretical approach, this method called for the development of the ear.

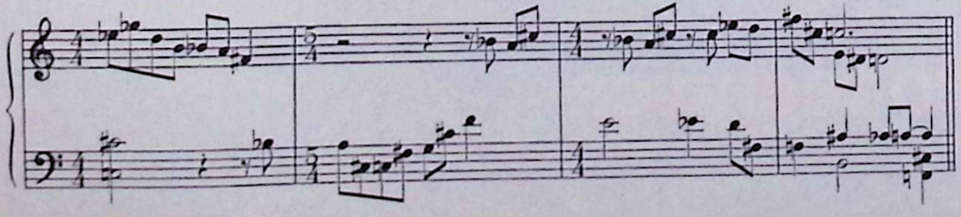
In my career, I've been fortunate to play with many musicians who learned through this tradition—Stan Getz (sax), Chet Baker (trumpet), and Woody Herman (clarinet, sax), to name a few. Being more of an "ear player" is actually more practical for players of single-note instruments; those who play a chordal instrument, such as the piano, are usually more theoretically oriented, simply because they need to play chord changes. But pianists who can augment their studies with the looser "ear playing" approach can add a valuable dimension to their music.

One way to get started is to play along with one of your favorite jazz recordings. Don't think about chord changes; just let your ear guide you. See how well you can negotiate a set of changes without knowing what they are! By playing without the parameters imposed by a chord progression, you will automatically bypass your usual vocabulary of licks and hand positions. In science there is a vast library of research and discoveries, yet many new advances are come upon by accident. In music, too, there is a vast library, of recordings and books, yet innovations are often born of chance, from people playing what might be called wrong notes. This is a direct result of playing with abandon, rather than trying to fit into the constraints of music that has already been played and analyzed.

Ex. 1. An intervallic approach to improvisation: The melody line, played over a harmonically ambiguous accompaniment, is created using only seconds and sixths.



Ex. 2. A few bars from one of my own free-form improvisations.



Another approach is to play single-note lines without any chordal accompaniment. Again, this will help free you from patterns that have become automatic, and it will make your lines stand out in greater relief, letting you hear yourself more clearly. (For some examples of melodic lines with little or no chordal accompaniment, listen to Herbie Hancock on the Miles Davis recordings *Miles Smiles* [Columbia, CS 9401], *Nefertiti* [Columbia, CS 9594], and *Sorcerer* [Columbia, CS 9532].) Many times a pianist uses comping as a crutch for the right hand. Take away the left hand, though, and your right hand can begin to create phrases that are not rhythmically dependent on chordal placement. You'll probably find your right hand breaking away from the conventional scalar and arpeggiated approaches to melody, which are usually dictated by left-hand chords. You can surprise your ear by playing intervals you ordinarily wouldn't play. As an exercise, try creating a melody line by limiting yourself to certain intervals—seconds and sixths, for instance. The line can then be placed over chord changes without having to directly relate to them (Ex. 1). Let your ear guide you in choosing the intervals and deciding when to employ this device.

Transcribing solos also helps train the ear, but trying to get every note precisely doesn't leave much room for spontaneity. Instead, go for the overall shape and feeling of the solo. If a certain phrase appeals to you, you can figure it out exactly, but the idea is to let your ear give you an approximation of the sound. This way you can assimilate someone else's style while infusing it with your own. Jazz has evolved in just this way. But in the last decade or so, there has been little stylistic development, and more of an absorption and refinement of styles already established. By returning to a looser approach such as ear playing, we are opening the door to real stylistic development.

Observing live performances is a good way to hone your listening chops. When you go to a club or concert, try to discern the various components of the music—chord qualities (major, minor, dominant, etc.), chord progressions, voicings, scales, and time signatures. When you get home, see if you can recreate what you heard.

A more rigorous exercise in listening involves playing with other musicians. Listen to what's happening around you. The bass player's choice of notes, the drummer's fills and hits, the guitarist's chords and voicings, the soloist's lines and phrasing—all of these can be integrated into your vocabulary. At the same time, expose yourself to other types of music. Try some Debussy and Ravel, Berg, Webern, Bartók, Schoenberg, and Takemitsu. Experiencing the journey away from tonality may offer insights that will affect your playing.

All of this is only to get you to sit down at the piano and just play, letting your ear guide your intellect. It can be in any style, or no style in particular. The idea is to free yourself from psychological and technical blocks, and let the music flow. The theoretical analysis can come after the fact. To get you started, I've transcribed a few bars (Ex. 2) from one of my own ear-playing adventures. ■

Andy LaVerne is a New York-based composer and jazz pianist.

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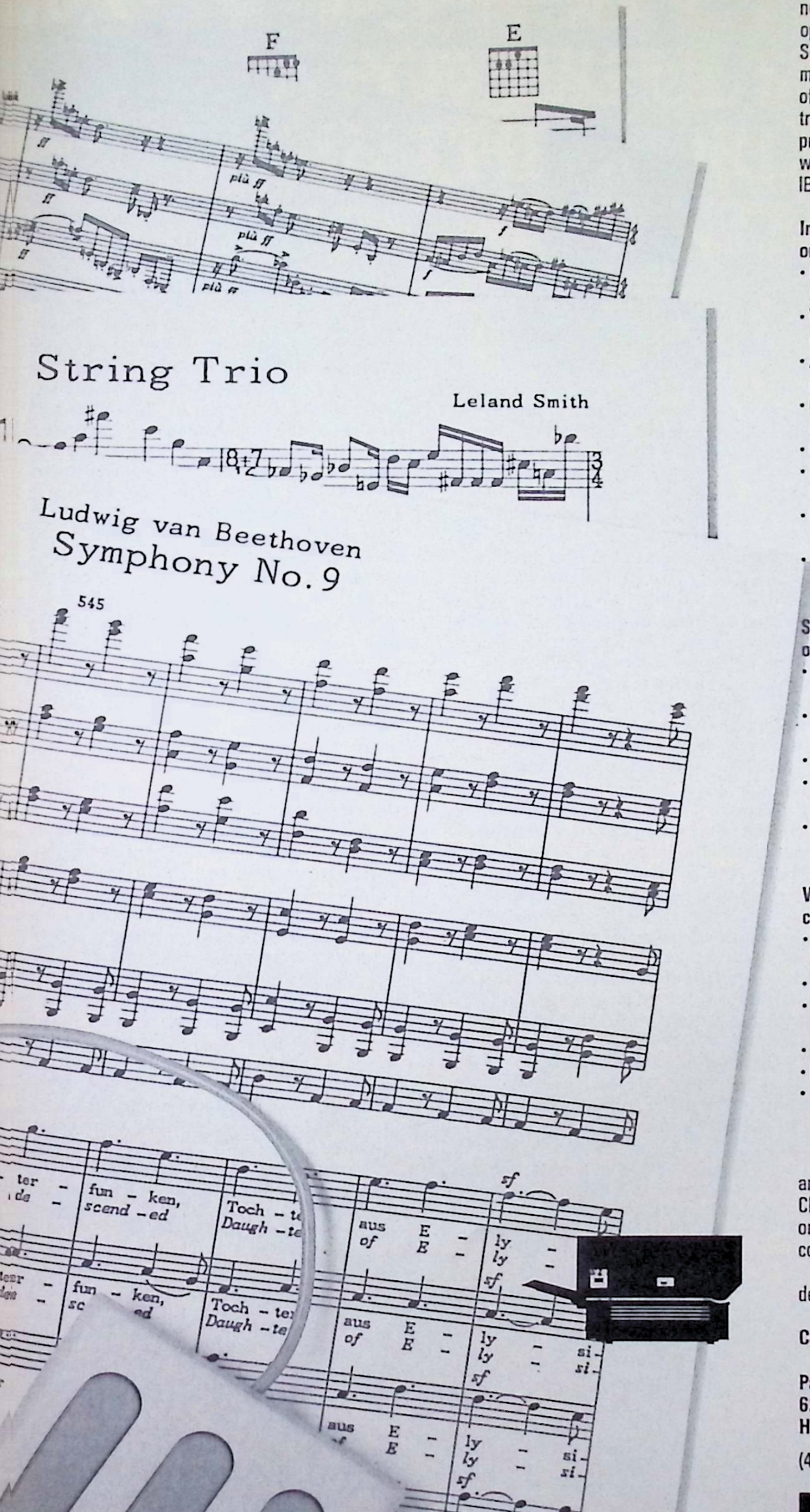

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PRIVATE LESSON

MASTER CLASS

URSULA OPPENS

READING BETWEEN THE STAVES

AS THEY ARE PASSED ON TO EACH NEW generation, all forms of music depend heavily on the aural tradition. European classical music, however, was written with the intention that the score would be the main conveyor of information. Yet even with classical repertoire, the aural tradition prevails, especially with a core of the best-known works. From hearing these works repeatedly, we feel we have known them all our lives; when we first study their scores, it is often with an initial impulse simply to confirm memory. This can be dangerous. First of all, the score was written so that someone other than the composer could perform the piece, and should therefore take precedence over any other means of learning the music. (Remember that when these works were composed, recordings did not exist.) Moreover, the familiar interpretation may not be one that has been carefully handed down from master to master, but something more haphazard. So we need to start scrutinizing the score. This can lead to a number of surprises.

I recently studied Beethoven's *Moonlight Sonata* for the first time. Like everyone else, I had heard it all my life, but mainly through amateur performances. How would I determine what was really there? The first things I noticed were the tempo, *adagio sostenuto*, and the cut-time meter, meaning that the measure is to be thought of in two beats instead of four. Wait a second! Those markings alone seemed to present a major paradox: If you play the piece slowly, in the *adagio* tempo that is commonly taken, it seems to have not two but four or even 12 beats (because of the eighth-note triplets) per measure. What did Beethoven mean?

While he gave no metronome marking for this sonata, he did do so for other cut-time pieces marked *adagio sostenuto*—the Sonata, Op. 106, and some of the symphonies and string quartets. Perhaps those works, I thought, could give me a clue to the *Moonlight's* tempo. I found that the *Fourth Symphony* is marked 106 for the half-note, but the musical context is too far from the Moonlight to draw a parallel. Other *adagios* (all, however, with the meter indicated in quarter-notes) range from 80 to 88 for the eighth-note.

This was some help, but not quite enough, so I consulted Carl Czerny's *Proper Performance Of All Beethoven's Works For The Piano*. Czerny was a student of Beethoven's, and also heard many of his concerts. This is clearly the most inclusive book of its sort, but one must keep in mind that it was written in 1842, some time after Beethoven had died and a longer time, obviously, after he had stopped performing. Czerny suggests the correct tempo for the first movement to be 54 for the half-note, adding that because of the *alla breve*, one should think of it as an *andante*. I realized that even if I took these various sources with a grain of salt, the tempo of this movement would be much faster than I had assumed it to be.

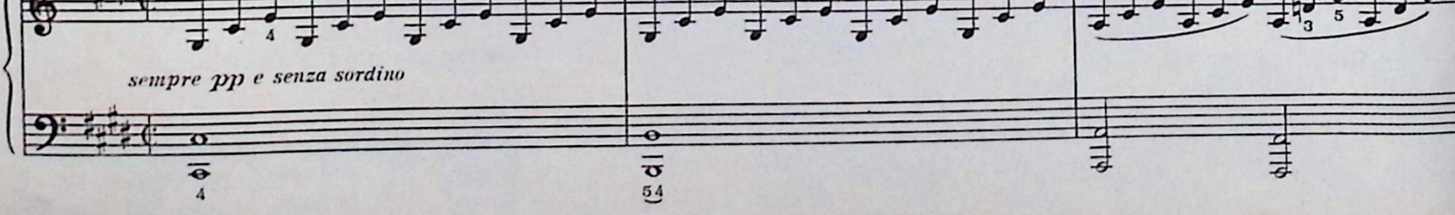
Looking again at the score, I saw other markings: *sempre pianissimo* and *senza sordini*. The first was clear enough—always *pp*—but *senza sordini*? *Con sordino* usually means with the mute, or soft pedal. Since *senza* means "without," I thought the phrase might mean "without the dampers," *i.e.*, with lots of pedal. The slow movement of the third piano concerto is also marked *senza sordino*, and Czerny's observation that Beethoven played the entire theme without changing the pedal is reprinted in many popular editions. Czerny also notes that on modern pianos ("modern" referring to the early 1840s), the pedal should be changed more frequently to compensate for their newly increased strength—an adjustment that's all the more necessary when playing on today's pianos. From these bits of information, I began to imagine a new sound of blurred changes, somewhat akin to Impressionism. This would be hard to produce, but not impossible; one would have to change the pedal with a number of partial releases, rather than releasing it cleanly. I then concluded that Beethoven wrote the entire movement as a kind of special effect.

With this in mind, the reiteration of *pp* as the melody enters in bar 5 is less of a surprise. Czerny says to play the melody with emphasis, but Beethoven, apparently predicting that the well-schooled pianist would do this naturally, warns "but not too much." To play at this dynamic level is not easy. The melody has to sound above the accompaniment, but by the least amount possible. You have to plan the contour of every phrase, or you may find yourself struggling to play each note softer than the last one, which was already as soft as possible. There are three main sections of *pp*: the exposition (bars 1-28), the beginning of the recapitulation (bars 42-48), and the coda (bar 60 to the end). But there are also some areas of *piano*, each of which can be treated as a real (though gentle) opening up of the sound. In measures 32 to 39, as the tension builds on the dominant *G#* pedal point, I think there is an unwritten but permitted crescendo, though on a small scale. Here my justification is somewhat roundabout: Since I assumed in measure 5 that Beethoven knew the habits of pianists, telling them when not to do something, here he must have foreseen the desire for at least a small crescendo, and he does not forbid it (e.g., by writing *sempre p*).

Does any of this "score scholarship" lead to a musical performance? Not of itself. I have not talked about *rubato*, the need for every phrase to be organic and flexible. More important, though, is that every aspect of the performance be consistent with the whole. Studying a score is like entering into a mystery. The facts may not necessarily be laid out in unmistakable form, but there are myriad clues suggesting imagined sounds. When these clues can be assembled in a way that supports, rather than contradicts, a larger view, and when you begin to feel you understand what the composer's fantasy was, then your interpretation will have a basis on which to succeed.

Ursula Oppens is a New York pianist acclaimed for her interpretations of both standard and new repertoire.

The opening of Beethoven's Moonlight Sonata.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3 5
4
54

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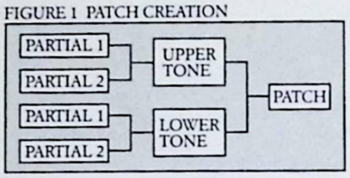
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UPPER TONE
PARTIAL 1
PARTIAL 2
LOWER TONE
PATCH

LA Synthesis Explained/LA Synthesis is component synthesis on the highest order. To create complex sounds, the D-50 starts with a very simple premise—build sounds from the ground up by combining different types of sounds together, and then experience the interaction of these sounds on each other. We start with individual elements of sound called Partials. Two Partials are combined to create a Tone, and two Tones are combined to create the Patch. (Figure 1) The D-50 can hold 64 Patches and 128 Tones. Each of the two Tones can be processed individually by on-board signal processing that is sophisticated enough to rival a rack-full of equipment, and includes digital reverb, digital parametric eq,

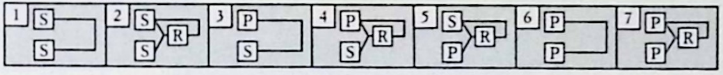
MEMORY CARD
Roland
D-50 LINEAR SYNTHESIZER
I-37 Soundtrack
DUAL SP C4 Bal 50
U: MelloTones
L: BriteFifth
UPPER
LOWER
PARTIAL BALANCE
VALUE
LOCAL
EDIT
TONE DETUNE
KEY MODE
SPLIT POINT
TONE BALANCE
L-TONE EDIT
U-TONE EDIT
TUNE/FUNCTION
MIDI
INTERNAL
CARD
PATCH BANK
1
2
3
4
5
6
7
1 LOWER 2
PARTIAL SELECT
1 UPPER 2
VOLUME
AFTER TOUCH
KEY TRANSPOSE
CHASE
PORTAMENTO
MODULATION
BENDER

LINEAR SYNTHESIZER
SOUND SYNTHESIS TECHNOLOGY

digital chorus, digital delay and more. But before we go too far, let's get down to the basics, the building blocks of LA Synthesis — Partials.

Synthesizer Partials/What is a Partial? A Partial can be either a digitally synthesized waveform, or a PCM sample. Each of the thirty-two Synth Partials contains all the components usually found in the hardware of an analog synthesizer, presented here as digital software. This includes the Wave Generator (to create a sawtooth or square waveform), the Time Variant Filter, the Time Variant Amplifier, three five-stage Envelope Generators and three digital LFOs.

FIGURE 2 STRUCTURES


1 S S
2 S S R
3 P S
4 P S R
5 S P R
6 P P
7 P P R

In this way, even though the D-50 is a digital signal, programming the Synth Partial is very similar to programming on an analog synthesizer, (as these components react in the same way as VCO's, VCF's and VCA's on analog synthesizers) while offering sound synthesis capability beyond the most advanced digital synthesizer.

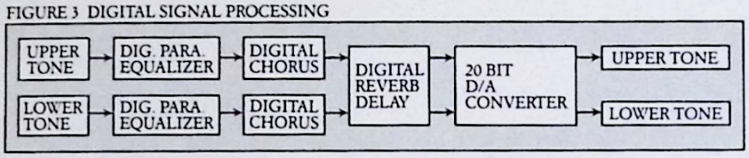
PCM Sampled Partials/A Partial can also be more than a digitally synthesized signal, it can also be a PCM sample. Resident in the memory (ROM) of the D-50 are over 100 carefully selected 16 bit PCM Sampled Wave Tables which can be used by themselves, combined with Synth Partials or combined with each other. The PCM Partials are carefully selected, and digitally processed so that they combine well with other Partials. Some of the sounds include a wide variety of the attack portions of percussive sounds: marimba, vibes, xylophone, ethnic instruments, grand piano hammer attack (with the fundamental removed), a variety of flute and horn breaths, a range of different string plucks and bows, nail files, guitars, and many more. The Wave Table library also includes Loop sounds and long samples, such as: Male and female voices, organs, pianos, wind and brass instruments, and also Harmonic Spectrum sounds, which are created by removing all of the fundamentals of a sound, isolating its harmonic components.

COMPARE
COPY
UNDO
EXIT
DATA TRANSFER
WRITE
INCREMENT
DECREMENT
SHIFT
STU
VWX
YZ-
JKL
MNO
PQR
ABC
DEF
GHI
SPACE
ENTER
STRUCTURE
S:SYNTHESIZER SOUND GENERATOR
P:PCM SOUND GENERATOR
R:RING MODULATOR
OUTPUT MODE
UPPER
LOWER
REV
U OUT
L OUT
P-ENV
CENTER PITCH
KEY ON
KEY OFF
TVF/TVA ENV
EQ
LOW FREQ
HIGH FREQ
BOOST
CUT
PATCH NUMBER
PARTIAL MUTE

The sounds created by the D-50's PCM Waveform Generator are far superior to wave table samples found in other synthesizers, which are usually only one looped cycle in duration, and are usually no more than 5 milliseconds. In contrast, many of the PCM Partials on the D-50 are up to 256 milliseconds.

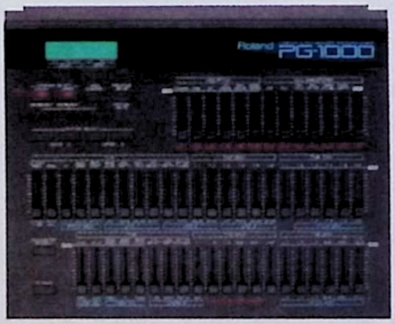
Structures/The combination of the Partials' operation modes can be set by selecting one of the seven Structures. (Figure 2) By choosing one of these Structures it is possible to combine two Synth Partials, or two PCM Partials, or a combination of the two in several different relationships. In addition, the Partials can be cross-modulated by the digitally-controlled Ring Modulator, which helps to create the complex harmonic environment for the resulting Tone. Unlike ring modulators of the past (which tended to be interesting yet unpredictable), the Ring Modulator in the D-50 is designed to track with the keyboard, ensuring the proper harmonic relationships as you go up and down the keyboard.

FIGURE 3 DIGITAL SIGNAL PROCESSING



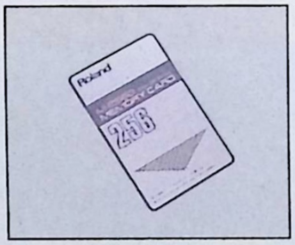
Built-In Digital Effects/The final routing of the signal before it reaches the output is through the digital effects circuitry. (Figure 3) But, far from being merely an add-on, the D-50's effects are as carefully thought-out as the rest of the instrument, and likewise just as integral to the creation of new and unique sounds. The first effect is the digital Parametric Equalizer, used to contour the equalization curve for the tone before it passes into the digital Chorus, or we should say Choruses, as the D-50 fields an arsenal of eight chorus circuits—all available simultaneously, configured in any of 16 modifiable presets such as panning chorus, tremolo, flanging and much more. Within each chorus there are parameters set up as to how these choruses interact for maximum effectiveness. Lastly, the signal passes through the digital Reverb, which can also function as a digital Delay, offering various room and hall sizes, gated (non-linear) reverb, reverse, stereo panning effects that can be routed to either or both of the stereo outputs. The awesome power of these built-in effects means that the D-50 requires literally no outboard effects processing. And just as important, because all the D-50's effects are processed in the digital realm, they are completely noise free.

PG-1000 PROGRAMMER



A Mother of a MIDI Keyboard/The D-50 is also an excellent mother keyboard for your MIDI system, as it is totally dynamic, offering 61 keys in four different key modes (Whole, Split, Dual and Separate). In the Whole mode the D-50 is 16 voice polyphonic, while in the other modes it functions as two 8 voice synths, one for each Tone. All mother keyboard functions are programmable per patch including a separate transmit channel. As the D-50 is truly bi-timbral it can function as two MIDI sound modules as each tone can receive on its own MIDI channel. All D-50 parameters and programs can be saved on Roland's new M-256D memory card which offers 32K bytes of storage in the size of a credit card. All of the D-50 functions can be programmed internally, or externally with the use of the optional PG-1000 programmer, which combines visual clarity and speed for the programming professional.

M-256D MEMORY CARD



Put It All Together/Taken as a whole, the D-50 represents more sound creation potential than most of the leading synthesizers combined. And just as important, it comes at a price that you can afford—$2095.00. Of course, the only real way to find out for yourself is to play the instrument, but we'd like to suggest you do a little more. Go to your dealer, but before you try the D-50, try three or four other synthesizers first—really give them a good going-over. Then spend some time on the D-50. We think you'll find that the world of sounds you knew before, now seems to be black and white— while the D-50 has just exploded you into a universe of color. The new force has taken you by storm. RolandCorp US, 7200 Dominion Circle, Los Angeles, CA 90040 (213) 685 5141.

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TECHNOLOGY

SYNTH & MIDI BASICS

HOWARD MASSEY

BEGINNER'S GUIDE TO FM SYNTHESIS

SAY THESE TWO WORDS SLOWLY: *Digital. FM*. Ahhh. Breathe in and out, then say them again. *Digital. FM.* Probably no two words have meant more to more modern keyboardists, in both positive and negative ways. And no two words (with the possible exception of the word "MIDI") have done more for certain bank accounts here in the U.S. and in Japan.

Unless you are the lone *Keyboard* reader who doesn't own or hasn't at least used a digital FM synth (and you know who you are, dahling), this next series of columns, in which we describe the FM process, should be Required Reading 101 in your Master of MIDI program. But let's get down to brass modulators. Yamaha originally licensed the rights to the FM process from Stanford University, where it was developed in the early '70s. Of course, unless you've been living in a cave for the last five years, you'll be aware that it was also Yamaha who struck high-test oil by putting FM technology in the DX7 synth—which has proven to be the most commercially successful electronic instrument yet.

Problem is, digital FM has gotten a bad rap. In fact, despite a good deal of rumor to the contrary, these instruments are not particularly difficult to program. But they are complicated, and they do force you to take a more analytical approach than many other types of synthesis systems. On the other side of the coin, digital FM programming is really a very logical operation—once you understand a few basic facts about the process itself. Once again, let's savor each of the two mighty words separately. "Digital" is a term that we defined in this column back in Dec. '87: it simply means that everything being done in the synth is reduced to numbers, or "digits," for mathematical manipulation within a computer environment. In other words, a digital synthesizer builds a mathematical model of a sound, which ultimately will be converted into sound itself by the ubiquitous *digital-to-analog converter* (or *DAC*), which we also described in Dec. '87. "FM" stands for a process called *frequency modulation*, which will require a bit more explanation.

Let's break things down further still and examine each of these words on its own. "Frequency" describes the rate of repetition of the *cycles* of a sound wave. A cycle, in the case of a vibrating object, is the movement from its initial position to the point of maximum displacement in one direction, movement back through the initial position to the point of maximum displacement in the opposite direction, and finally a return to its initial position. In other words, if the vibrating object is a guitar string, a cycle would be the time it takes for the string to move from the center to the right, then to the left, and back to the center. The movement of this vibrating body creates a slight disturbance of the ambient atmospheric pressure. If we were to illustrate this phenomenon, it would look something like Fig. 1. On the other hand, if the movement of air were to occur three times per second, we would graph it as shown in Fig. 2. The second wave would be said to have a frequency of three cycles per second, and would have three times the frequency of the first wave. In aural terms, frequency translates to pitch: the faster a wave's frequency, the higher the pitch we perceive. A shorthand unit of measurement, called the *Hertz*, or *Hz*, is used to quantify these frequencies. One Hz is simply one cycle per second, and the human ear can generally perceive sounds that have frequencies as low as 20Hz and as high as 20,000Hz. We can abbreviate the latter measurement as 20kHz (for *kiloHertz*—short for 1,000Hz). This 20Hz-20kHz range is usually called the *audible range*, and movements of air below this range (called *subsonic*) and above this range (called *ultrasonic*) cannot be perceived by humans as sounds. Many animals, however, can perceive ultrasonic waves, which should help to explain why your dog goes nuts when you blow into an apparently silent dog whistle.

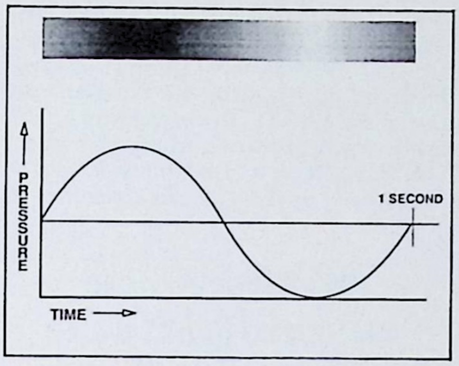

Fig. 1. Graph of pressure versus time created by a single cycle of a 1Hz sound wave. At the high point in the graph, air molecules are packed more densely together, while at the low point they are further apart.

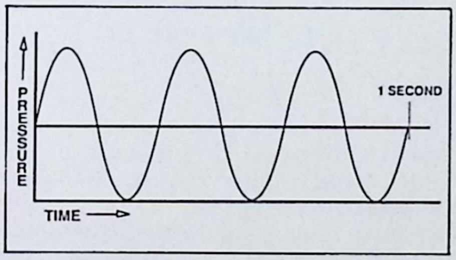

Fig. 2. Graph of a 3Hz sound wave.

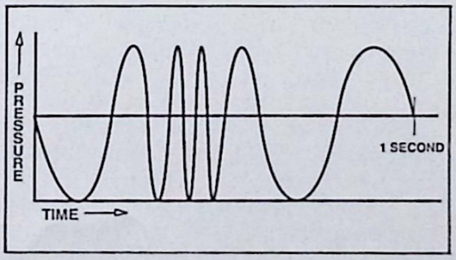

Fig. 3. Low-frequency sound wave modulated by low-frequency oscillator.

Now let's take a look at the word "modulation." In synthesis, this simply refers to a process of altering something about a sound. For example, when you route an LFO (low-frequency oscillator) signal in a subtractive synth to a voltage-controlled or digitally controlled amplifier, you are *modulating* the amplitude of that sound—in other words, you are performing *amplitude modulation* (or *AM* for short). At low speeds—less than 20 times per second or so—this will result in an aural effect known as *tremolo*. Similarly, when you route an LFO signal to control the frequency of a voltage-controlled or digitally controlled oscillator in a subtractive synth, you are performing *frequency modulation*, which, if done slowly enough, will result in a periodic change in pitch, more commonly known as *vibrato*. When the modulating source is oscillating at a frequency within the range of human hearing, the effect on the sound output is much different, as we will discuss next month.

Getting back to our graphs, Fig. 3 shows what a low-pitched sound with vibrato looks like. As you can see, the periodic change in frequency yields this characteristic accordion-like shape. And it really is particularly important to think of frequency modulation in this way, since the whole development of the digital FM process had its genesis in John Chowning's curiosity about the simple process of vibrato. When a violinist, for example, wants to add vibrato to a bowed note, he or she will gently rock the fingertip that is holding the string against the neck in order to

Continued on page 152

Howard Massey is director of the Center for Electronic Music, a non-profit organization offering educational and production services in the technology of music. There is no mention of any of his relatives in this month's column.

TECHNOLOGY

IN THE STUDIO

BOBBY NATHAN

MIXER AUTOMATION THEN & NOW

AS MULTI-TRACK RECORDING GREW from 4- and 8-track to 16- and 24-track and 48-track, the need to automate the mixing process became inevitable. Even the best producer/engineer team was only as good as the four hands involved in muting faders and riding levels. Even with the aid of a qualified assistant, which usually added another hand or two, it was impossible to get the same feeling twice without many passes of practice. What's more important, with the producer and engineer watching their cues for fader level rides, their attention was taken away from the full intensity of the music and the mix. Those who used early automation systems had to pay the price, but many felt it was well worth the aggravation of using systems that were prone to crash and didn't always play back the mix the same. Today automation has been perfected; it's still not transparent, but it's advanced enough so that its reliability has made it a part of the everyday mixing procedure.

Data Storage On Tape. The first automation systems required two tracks to store the computer's data on tape. When working with less than 24 tracks, giving up two tracks was a real sacrifice. The procedure was as follows: You would print your first pass of automation data of the mix on track A. Usually if you made any mistakes in this pass you could roll back and punch in, but you would have to play the entire pass back after you were finished to be sure there were no glitches. After additional passes, you might discover that there were glitches at the punch-in and -out points. So even though you could punch in on the initial data track, it was not a good idea if you were planning to do many additional updates.

The next pass would be recorded on track B while reading the data from track A. Additional mutes and fader level changes could now be made while the engineer and producer listened to what had been previously done on track A. The new moves would be digitally mixed on track B with the stuff coming off of track A. For the third pass you would read the data off track B and write new data over the previously recorded track A.

This procedure had a number of pitfalls. The first was that the engineer always had to keep a conscious account of which track he was reading from and which track he was writing to. This was further aggravated by the fact that patch cords had to be repatched at the end of every pass. For instance, from tape out to processor in (for the track you were reading from) and from processor out to tape in (for the track you were writing to). As if this weren't enough of a pain, a bigger problem was the fact that the console computer's scan time was slow. Every time you read data from the tape and added new data when bouncing to the other data track, the mix would be delayed by a few milliseconds. Critical mutes would eventually become so late that they would have to be written over again. (The same held true with critical fader movements.)

Finally SMPTE-based automation came into play. SMPTE-based automation only required one track to be given up on the multi-track recorder. Many of today's SMPTE/MIDI devices use the same track to sync up sequencers and drum machines. In SMPTE-based automation systems, the data, instead of being stored on tape, was stored in RAM memory and on floppy disk. Since SMPTE time is a constant, mutes and fader levels never became late. Also, because each pass was stored as a separate mix, you could always go back to one of your mixes anywhere along the way. Many times an engineer and/or producer will lose the feeling after 15 or 20 hours of mixing and then decide to go back to mix number 7, for example, which was done in the sixth or seventh hour of mixing. With the data storage on tape method, you only had access to the last mix and the mix before.

> *'Watching 36 or 48 motorized faders dance on the console was very much like seeing a player piano move its keys in a ghostlike fashion.'*

Another important feature of SMPTE-based automation is the ability to join or merge pieces from different mixes, such as the intro, first verse, and first chorus of mix 12 joined with the second verse and second chorus of mix 7.

Moving Faders vs. VCAs. In the early days of automation, voltage-controlled amplifiers (VCAs) were very noisy, and 36 of them would add a cumulative amount of noise that made their use problematical. Some of the early console manufacturers, such as API and Neve, came up with the idea of motorized, or moving, faders, which eliminated the need for outboard VCAs. The computer would send positive or negative voltages to the fader's motors which would physically move the faders. A lot of engineers preferred this visual approach to mixing. Watching 36 or 48 motorized faders dance on the console was very much like seeing a player piano move its keys in a ghostlike fashion. The only drawback to this type of automation is that it was very expensive. It could not be retrofitted into just any console, and from a maintenance standpoint, it was much more of a nightmare than VCA faders.

Back then, dbx was one of the first companies to offer a reasonably priced low-noise VCA fader. This brought automation costs down by one third. Unfortunately, fader movement was tracked by only two LED null lights, one showing positive gain and one showing negative gain. If you wanted to punch in a fader level change at a certain point you would have to roll the tape to a few bars before and set the fader levels so that both the plus and the minus null LEDs would light, indicating that the fader was set at the same position as it was when it was recorded during the last pass. Such manual alignment was not necessary with motorized faders because they were always at their correct position. With the advent of SMPTE/disk-based automation, on-screen video displays illustrated fader level changes in an animated fashion, but faders still had to be moved manually to match their previous position before any punch-ins could be carried out.

Reading, Writing, Groups—Fader Levels & Mutes. Up 'til now we have been talking about reading and writing, but there are other modes of automation to discuss. For instance, if you liked the way you had written a certain track's mutes but not its levels, you could specify to the computer that you only wish to change that track's fader levels. But let's say that you had three tracks of background vocals; you had to spend about an hour to balance out their levels. You had to mute certain parts where they extended too long. And then you discover that all four tracks of background vocals are too loud. You would then assign them to a group, and simply crank the group's master fader up or down to adjust all of their volumes. If you wanted to write a mute to several tracks at once for a breakdown section, again a group master is the tool of choice. By muting the group master's mute, you would be muting whatever was assigned to that group. Many times several groups can be assigned to another group as their master. It is customary to assign drums to a group, lead vocals to another, background vocal tracks to another, etc. Even though a track is assigned to a group master, it still can be controlled separately. Having control either way is to the engineer's advantage and makes making the moves a lot faster. ■

Bobby Nathan is the owner of Unique Recording Studios in New York.

Oneness is a vision shared by anyone committed to the art of sampling. One source, one library, one program. One universal sample editing program which transcends the boundaries isolating existing sampling instruments. One program visionary enough to instill the life of stereo into monophonic samples, evoking images of sonic dimension still virgin to many samplers. One program with the power to reduce samples to their essential spectral components and the will to transform them through resynthesis. This embodiment of oneness and transformation is ALCHEMY, the first universal stereo sample editing network for the Apple Macintosh and supported samplers, available now from Blank Software.

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TECHNOLOGY

SYSTEMS & APPLICATIONS

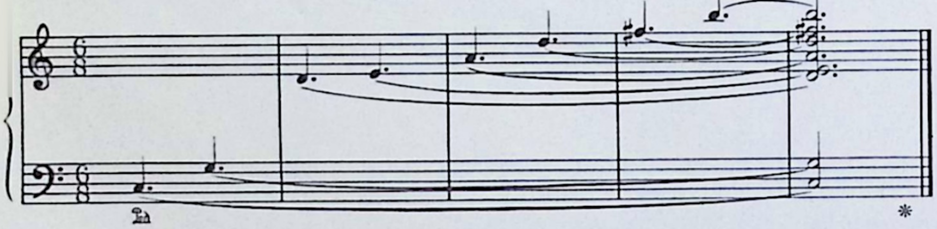
STEVE DE FURIA

MORE SPECIAL PITCH-BENDING TECHNIQUES

CONTINUING OUR DISCUSSION OF alternative bending modes, we now take a look at Yamaha's Key On mode, found on their DX100, 21, 27, and DX7II synthesizers. In this mode, notes for keys that are held down will be controlled by the bender, while notes for keys that have been released won't change. Obviously, in order for you to hear both sets of notes you must be using a patch that will still sound after a key is let up. One way to do this is to adjust the release times of the FM operators so notes continue to sustain after a key is released. Another possibility is to use the sustain pedal in conjunction with the Key On bend mode.

I find the pedal to be more flexible in most performance situations. If level 3 of the appropriate FM operators in the patch is set well above 0, then the pedal will sustain notes indefinitely, as if you're still holding them down with the keys. They will be as loud as any subsequent notes you play. When you move the bender, only the notes currently under your fingers will bend. If level 3 is set to 0, then the pedal notes will fade away at the rate determined by rate 3. Subsequent notes will be louder than the pedalled tones. Again, when you move the bender, only the notes under your fingers will bend. The difference between using high and low level 3 settings is primarily in the loudness mix between the bent and unbent pitches.

Ex. 1. When using Key On mode to bend a series of notes against other sustained notes, hold the pedal down for the ntire chord and bend each note over the first eighth-note of its duration.



If you release a key while still bending, the note will jump back to its original pitch. This means you may have to do a little adjusting in your playing style if you want to bend a series of notes against other sustained notes (see Ex. 1). Suppose you want to bend up to each new note in the pyramid from a tone a fifth below it. Your first approach might be to play an *F* and bend up a fifth to C, or play a C and bend up to G, and so on. The problem is that when you bring the bender down so you can pull up on the next note, the last note you bent will fall back to the starting pitch. If you release the note before you drop the bender, the pitch will also jump back to the starting pitch. The way to do it is to pull the bender down a fifth before you play the first C. Then play the first note and let the bender return to normal. Step on the pedal, release the key, and pull the bender back down a fifth. (The pedal holds the pitch of the first note. Since you're not holding down its key, you can move the bender without affecting the note.) Now play the G and slide the bender back to normal. Release the key (don't take your foot off the pedal), pull the bender down a fifth, and play the next note. You can go on doing this for each note in the chord.

This kind of bending isn't necessarily imitative of any particular instrument. It's more like an orchestration technique. (Try it with sustaining brass or string patches.) Phrase the bending rhythmically. Time the bend to last an eighth-note's worth of the dotted quarter-note duration. Try alternating the direction of the bend with every other note. Once you get the feel of the keyboard/pedal/bender interaction, you'll find you can do any number of musically useful things. You can, for example, bend any combination of notes against any others in a voicing. And the chord doesn't have to be played as a pyramid either.

In my Feb. '88 column, I used a pedal steel example of bending a sus chord into a major triad. We used High Key to bend the top note in the chord, and Low Key to bend the bottom note in the chord. Now let's use Key On to bend the middle note. Step on the pedal and play sus4 chord in the root position. The trick is to play the outer notes (C and G) staccato and the inner note (*F*) legato. In other words, attack all three notes together, but let up the C and G as quickly as you can, leaving just the *F* held down. Now, use the bender to pull flat a semitone. Since the C and G are being held by the pedal they won't be bent. The *F* under your finger will slide down to *E* to create the major triad.

This is definitely not a normal way to play chords on a keyboard, so you'll have to spend some time working up the technique. Start off by working with three-note voicings. Practice attacking all three notes together with a quick release on the two outside notes. (Remember to use the pedal so you can still hear the released notes.) To eliminate any pitch jump at the end of the chord, release the held key, pedal, and bender simultaneously. You'll find that very short release times must be used if you release chords while the bender is away from the normal position. Try root position sus4 triads, bending down a half-step to the 3rd, and root position sus2 chords, bending up a whole-step to the 3rd.

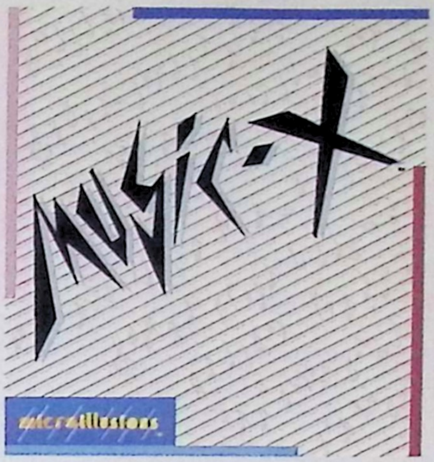
After you've gotten the hang of triads, move on to more sophisticated voicings and try holding and bending more than one note in the chord. For example, try bending the 3rd and 5th notes of a major 7th chord up a whole-step. (You'll add a #11th and 13th to the voicing.) And if you like the bend-to-unison lick we did last month, you can include it in any voicing that contains an interval with a second in it. Quickly release all the notes except the lower note of the second, and bend it sharp to unison. (Try it with C-*F*-G and C-*B*♭-C to get the idea.)

Speaking of bend-to-unisons, here's another Key On technique to try. You can bend entire chords to unison. Hold the pedal down and double-attack any chord (play the same notes both times). The synth will reassign voices, since you're holding the pedal. This means that there are two sets of voices playing the same notes initially. Keep the keys held down on the second attack and bend away. The voices held by the pedal won't bend, but the voices held by your fingers will. To bend a chord to unison, pull the bender flat before you hit the keys the second time, but after you've released the first attack. The second chord will come in flat against the first chord. The bender will let you pull them in tune. Of course, you can also bend from unison. Double-attack a minor triad and bend the second attack up a fifth to create a minor 9th chord, etc.

You're not limited to just double attacks of the same set of notes. You can bend whole chords as pyramids. Use the same approach I described in Ex. 1: Play the first chord, step on the pedal, and release the chord. Pull the bender flat (or sharp), play the next chord, and return the bender to normal. Release the chord, pull the bender flat, and play the next chord, and so on. On a 16-voice synth, five different triads can be layered and bent in this manner without any voice-stealing.

I hope this little mini-series on bending has opened up some new paths for you to follow. I also hope that some of the people who design the instruments we love to play have been following along and are now perhaps considering the value of adding alternative bend modes to their synths. ■

Steve De Furia is a studio musician and music software consultant.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COMMITMENT: We have committed ourselves to pushing ahead state of the art in professional music software, enabling you to open new worlds of creativity at a cost, both in hardware and software, that is well within the budget of any serious musician.

NO COMPROMISES or shortcuts have been tolerated as we designed this product. The master clock is accurate to 1 millisecond with a resolution of 192 clocks per quarter note. Sequences and library data can be any length, limited only by available memory — if you want, you can dump a 100K or larger sample into a library entry!

KEYBOARD MAPPING features allow almost any function of the sequencer to be controlled from a MIDI keyboard, footpedal, or other MIDI device. This includes starting/stopping the sequencer, initiating sequences, and even changing the key map itself!

REAL TIME: The system supports real-time recording of systems exclusive data, as well as full graphic-oriented and event-oriented editing of sequences. You can even record while in edit mode and watch notes appear on your edit display as you play them!

LIBRARIAN: A configurable librarian is included with the program. You can teach the librarian how to communicate with any MIDI instrument which outputs system exclusive data.

EDITING: An impressive battery of editing features will be supported. In fact, new editing features are being added daily as we interact with our network of working, professional musicians whose input has greatly contributed to the quality of this program.

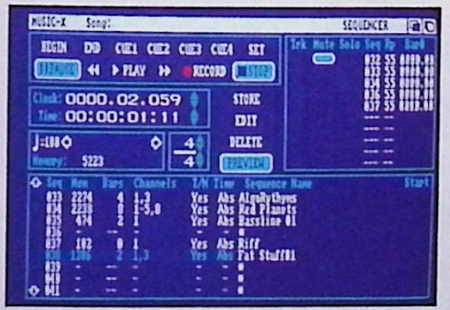
COMMITMENT: Our commitment to music production does not stop here. A future product, Patch Editor Construction Kit, will allow you to create graphical patch editors for virtually any synthesizer you may own. Some technical knowledge will be required, but since patch editors, once created, can be traded between users, you should have no problem getting an editor for your needs.

THE POWER: Part of the power of Music-X comes from the computer it was created for: The Amiga, one of the most powerful and inexpensive personal computers available. At last you can run these many powerful applications in an environment that is a pleasure rather than a chore to use!

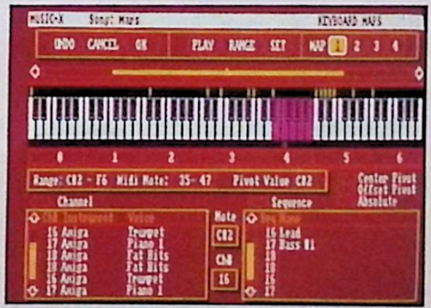
MICRO MIDI: Although Music-X will work with any of the many MIDI interfaces for the Amiga, we offer our own MIDI interface which we feel is a cut above. It features six outputs (each output switchable as OUT, THRU or OFF), two switch-selectable inputs, a channel loading indicator, and an external clock output (sync/start stop) for synchronizing older, non-MIDI drum machines, and a serial pass-thru!

MICRO SMPTE: This complete SMPTE Reader will allow Music-X to synchronize with video or audio tape decks. It connects to the Amiga parallel interface and includes a pass-thru so as not to interfere with printer operation. Our Micro SMPTE is compatible with all Amiga models (A500/A1000/A2000).

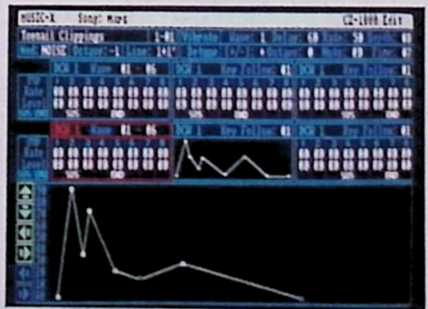
PHOTON VIDEO: Photon Video is a complete, integrated video animation system. It includes facilities for both 2-D and 3-D animation, as well as automatic tape transport control and real time playback of rendered images. Our 3-D rendering module supports variable light sources, shadows, transparency, and reflections in a 3-D environment. Other modules include Cel Animator, Object Editor and Transport Controller with SMPTE support.


MUSIC-X Song:
SEQUENCER
BEGIN
END
CUE1
CUE2
CUE3
CUE4
SET
PLAY
RECORD
STOP
Clock: 0000.02.059
Time: 00:00:01:11
STORE
EDIT
DELETE
5223
Seq Mem Bars Channels I/M Time Sequence Name Start
Yes Abs AlgoRythyms
Yes Abs Red Planets
Yes Abs Bassline 01
Yes Abs Riff
Yes Abs Fat Stuff01

SEQUENCER PAGE: Tape transport-type controls allow manipulation of up to 250 sequences; each contain 16 MIDI channels worth of data.


MUSIC-X Song: MAPS
KEYBOARD MAPS
UNDO
CANCEL
OK
PLAY
RANGE
SET
MAP 1 2 3 4
0 1 2 3 4 5 6
Range: C#2 - F6 Midi Note: 35-47 Pivot Value C#2
Center Pivot
Offset Pivot
Absolute
Channel
Sequence
Note
16 Amiga Trumpet
17 Amiga Piano 1
18 Amiga Fat Hits
18 Amiga Fat Hits
16 Amiga Trumpet
17 Amiga Piano 1
16 Lead
17 Bass 01

KEYMAP EDITOR PAGE: Create keymaps by dragging the mouse over a selected area of the keyboard. The highlighted region can then be redefined in terms of real-time behavior.


MUSIC-X Song: MAPS
CZ-1000 Edit

PATCH EDITOR: A sample patch editor (CZ-1000) of the type that will be included with the product.

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TECHNOLOGY

MIND OVER MIDI

JIM COOPER

NEW PRODUCTS ON THE TRAILING EDGE

ZOOM, ANOTHER NAMM SHOW FLIES by. Long hours getting a product ready, the sweat to get the booth set up, the endless hours on flat feet talking with a sore throat. The waiting for the empty crates to tear down. These are a few of my favorite things.

As with my April 1987 column, I'll endeavor to bring to your attention some of the products and news items at the show that may have escaped the notice of the *Keyboard* staff. First, the hardware.

I was very happy to see a company that was willing to buck the trend toward using more and more bits to represent a waveform in a sampling instrument. At one time, the LinnDrum and the Emulator used 8-bit samples in a non-linear scheme to sample a sound. Then the E-mu SP-12 and the Sequential Prophet 2000 went to 12-bit linear. Now we've seen companies going to 16-bit linear. This is the same sample size used in compact discs, and everyone knows how harsh string sounds can sound on a CD. I feel that this is due to the fact it is harder to fit the extra bits into the sample. If this is true, then it makes good sense that using only four bits on a sample would yield warmer string sounds in particular.

That is exactly the thinking of THD Electronics, who introduced their IM Plus sampler unit at the show. The real secret of the machine's sound lies in the way that the 4-bit sampling takes place. Instead of using just the traditional linear or non-linear encoding schemes, the IM Plus uses a combination of the two, by recording the original sample linearly, and playing it back thru a non-linear circuit. By not using the extra bits in sampling, the IM Plus can also use a lower sampling rate. A CD typically uses a sampling rate of 44.1KHz in order to get acceptable fidelity. The IM Plus, by using one fourth the bits, can get away with one fourth the sampling rate also, or roughly 11KHz. This results in an overall savings of 16 to one in total memory, which can be used either to extend the length of the samples, or to make the overall amount of memory (and hence the cost) less.

Once again, THD broke with tradition by choosing neither option. Instead, they devoted the extra memory bits to a complicated self-correcting parity scheme. Along with the 4-bit samples are two spare 4-bit representations of the sample. During playback, the electronics takes a sort of vote between the three versions of the sample. If there is an error on any one of them, the majority rules. I forgot to ask what would happen when all three versions were different, indicating an error in two of them. Probably an average of the three would be used.

The IM Plus follows traditional procedure with regard to analog filtering and envelope control, except that they have gone back to the original discrete component designs as used in the ARP 2600. Loops can be forward, backward, or sideways. Multi-sampling is not necessary, because the IM Plus uses the MIDI omni mode exclusively.

The company told me that a waveform display and modification program for the Texas Instrument TI-99/4a computer will be available soon. This program will be virtually identical to the programs available for E-mu and Sequential samplers. A built-in audio cassette recorder will allow storage of samples. No price has been set yet.

While on the subject of samplers, I was amazed at the sound quality of the DrumBox drum machine by BackToBasics Electronics. It was, however, a little pricey at $5,000 (remember that the original LinnDrum was also $5,000) and a little bulky (about the size of a small upright piano). I feel that the professional won't do without it, though. I tried to press the booth personnel for some technical details, but had no luck. All I could get were some buzzwords like "electro-mechanical" and a few snickers. The actual sounds were very alive. In fact, I could have sworn that the sound system was unnecessary, and that sounds emanated directly from the DrumBox unit. I did find out that BackTo Basics is having some problems coming up with a marketing decision concerning alternate sounds. Apparently, it's not going to be as easy as changing an EPROM. This probably has something to do with the method of generating the sounds.

In the last few years I've been asked many times how a studio should deal with the cable length limitations of MIDI. According to the specification, the cable should be kept under about 50 feet. This is fine for a small studio setup, but what about a large studio that needs to send MIDI data from one room to another? I usually suggest that the studio just save the data to a floppy disk and carry it to the other room, but that isn't always practical during a live session. *Voilá*, the solution was at the show.

UltraMusic showed a nifty product called MidiRemote, which converts the MIDI data into pulsed ultrasonic signals. These signals are of an amplitude and frequency that can pass through even soundproofed studio walls and allow the separation of the master and slave devices from 150 feet to a quarter of a mile, depending on humidity and wind direction. You might wonder just how this was demonstrated at the show. UltraMusic rented two small booths at opposite ends of an aisle (about 100 feet apart) with a clinician playing a keyboard setup at one booth and a bunch of rack gear at the other with headphones. To make sure that you could trust the honesty of the demo, you could request a song, then run down the aisle and hear it played.

Now, there is nothing particularly new about this technology. It has been employed in TV remote units for decades. What is new about the UltraMusic approach is the power level used. TV remotes operate around the one milliwatt level, while the MidiRemote operates at 650 watts. It is this power level that allows the data to pass through seemingly solid walls. A side benefit claimed by the manufacturer is the total elimination of all rodents from the studio. I applaud the innovation shown by UltraMusic, and hope the unfortunate incident with the dogs on the last day won't discourage their future efforts.

Software companies were everywhere at the show. Along with enhancements from the Passports, DigiDesigns, and Mark of the Unicorns were some impressive first offerings from unknowns.

Situated right next to the UltraMusic transmitter booth was a company called Rev 1.0 Software. They had a particularly impressive combination sequencer/waveform generator/patch editor/checkbook keeper/spelling checker called Musician's Helper. I hope to spend a fair amount of time with this package, which runs on the Macintosh II. This software deviates quite a bit from the normal Mac interface standard, making no use of the mouse or icons, for instance, but I really think that the time spent learning the 80 or 90 control-code sequences will be well spent. I didn't get much of a demonstration at the show, unfortunately, as the author/demo person had developed a bad migraine headache shortly after the show started, and was quite irritable. (Actually, that whole row of booths had an epidemic of migraines, which is quite a coincidence. It must have been air conditioning or something, for I felt a strong urge to leave the show after spending just a little time on that aisle.)

Well, that's it for this month. I hope you've enjoyed a chance to get an early look at the products that will surely be on your dealer's shelves real soon.

Jim Cooper is the former president of the MIDI Manufacturers Association and owner of JL Cooper Electronics.

1:34:23:14
572K free
Ad Jingle
REWIND
STOP
PLAY
PAUSE
250
SELECTION
PROGRAM
PLAY
RECORD
ASSIGN TO KEYS
LOOP
TEMPO
TAP
SAVE
SET POINTER
INSERT

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LARRY FINE

CHANGING TONE, PART II: VOICING

GIVEN A NEW OR RESHAPED SET OF hammers or a set in good condition, the primary means of tonal control that the technician has is over the hardness of the hammers. The harder the hammers, the more brilliant the tone, as more high partials will be excited. Conversely, the softer the hammers, the more mellow the tone will be. But before the technician starts to change the hardness of the hammers, a number of other conditions must first be met, for hammer voicing is the final touch in servicing a piano and should not be used to cover up for other defects or service problems:

- The piano must be meticulously tuned just prior to voicing. The importance of tuning, especially perfectly tuned unisons, cannot be overemphasized.
- The action must be well regulated so that the touch required to produce a given hammer velocity will be even from note to note.
- Most other piano problems, such as dead strings, wobbly hammers, buzzes, etc., must be eliminated.
- The hammers must be properly aligned with the strings: the strings of each unison must be approximately centered on the hammer.
- The surface of each hammer must strike all the strings of its unison squarely. If the hammer is not properly shaped or the strings are not level (which is frequently the case), then one or two of the strings may not get struck directly by the hammer but may simply vibrate sympathetically. Obviously, this will be detrimental to the tone quality. The technician must check to see which is at fault. If the strings are not level, each must be reseated if possible. If that is not possible, or if the hammer surface is not level, it must be reshaped slightly to correct this problem.

After all of these items have been taken care of, the technician can proceed to voice the hammers. Most hammer voicing involves softening the hammers, because new and reshaped hammers are usually too hard and they get even harder after being played awhile. To soften the hammers, the technician sticks needles into selected places on the hammer to make the felt less dense and compact, checking the tone constantly between jabs of the needles until the desired tone quality is reached.

Voicing technique varies a lot from one technician to another. The prevailing wisdom is that on a hard blow of the hammer the deepest layers of hammer felt are affected (compressed) and therefore one should deep-needle a hammer to soften the sound of a hard blow. A medium blow will affect the middle layers of hammer felt, so medium needling is called for there. A soft blow will affect only the very outer surface of the hammer, so very shallow needling is used to change the tone of a soft blow. Needles are always inserted through the narrow edge of the hammer; one should never deep-needle the hammer at the striking point or the hammer will be permanently ruined.

So much for the prevailing wisdom. At a recent convention of the Piano Technicians Guild, I encountered no less than three radical departures from tradition by three well-known and respected technicians. One confided to me that he needles in unmentionable places to brighten the tone. Another needles the hammers broadside with a vengeance, using a large needle in an electric drill. And the former head technician of one of the world's most respected piano makers created havoc by announcing that he always deep-needles at the striking point when he voices a piano. What can I say?

When hammers are too soft, or when some hammers have been over-needled, sometimes a light filing will bring up the tone. But when that fails, most technicians will resort to the use of chemical hardeners. Chemical hammer hardeners are somewhat controversial in the piano industry. Technicians use them because there is often little else that will do the job of brightening up hammers that are too soft, but the quality of brightness obtained will not always be the same as the quality that could be obtained from hammers that have not been doped. Also, it is generally thought that chemical hardeners may damage the natural elasticity of the wool fibers. Usually, just playing the piano for a few weeks or months will brighten it considerably, but if that is not sufficient, or if brightness is needed right away, such as for a concert, then chemical hardeners will most likely be used. Another technique used by some technicians with some success is heating the hammer surface with a hot hammer iron to dry out and harden the outer layers of felt.

Very often the piano owner leaves it to the discretion of the technician how bright or mellow the tone of the piano should be made. However, whenever possible, the piano owner or pianist should participate in that decision since they will have to live with the results. When voicing a grand, be sure that the lid is in the same position it is in during regular use, and that the voicing of the piano is satisfactory in both the shift and unshift positions of the una corda pedal. Remember, though, that voicing is not acupuncture; there are no specific points on the hammer that correspond to, for instance, the third or the seventh partial. The technician can reduce or enhance the intensity of the upper partials in general and make the tone even from note to note, but may not be able to produce exactly the harmonic content or decay characteristics that the piano owner would like, both of which are influenced by other factors discussed in my previous columns.

When a new set of hammers is installed or an older set is reshaped, it may initially take quite a few hours to properly prepare and voice them, but after that, if some voicing is done each time the piano is tuned, the piano can be kept sounding its best with a minimum of upkeep until major reshaping or replacing is again necessary. How often the hammers need to be filed and voiced depends on how often and how hard you play. There is no rule about this. A piano that is used constantly may benefit from a light filing and voicing several times a year. A piano in the home that is only occasionally used could go many years. The problem, of course, is that one can never know just how the piano will sound when the hammers are reshaped and voiced, so tone regulating work is always a bit of a gamble.

Some of you may be wondering why you haven't heard of the need for hammer filing and voicing before. I often don't mention voicing to my customers because so many of the pianos I service need other work much worse. Unless the piano is intolerable to listen to, I feel that the customer would get more value out of the few dollars he or she has earmarked for piano service by having the piano tuned more frequently and having the action regulated, the keys rebushed, etc. In some cases, a new or larger piano would be needed before either the technician or the customer would get any satisfaction out of voicing work.

One word of caution: A novice with a voicing needle and a bottle of hammer hardener can destroy a set of hammers in five minutes. Voicing is the last thing piano technicians learn to do well. Needless to say, it's not something you should try to do yourself. You should use at least as much discretion, and probably more, in choosing someone to voice your piano as you would in choosing someone to tune it. ■

Larry Fine is a piano technician in the Boston area, and the author of The Piano Book. *He is a registered craftsman member of the Piano Technicians Guild.*

TECHNOLOGY

DIGITAL SAMPLING

PETER GOTCHER

STEREO SAMPLING: FRIEND OR FOE?

IF YOU'RE OLD ENOUGH TO REMEMBER what a big deal it was when stereo records superseded mono records, the MIDI revolution may have passed you by while you were busy planning your retirement fund. Stereo adds realism, ambience and space—its benefits to a full ensemble recording are obvious. But does stereo really enhance those short recordings of isolated sounds called samples?

If you're in the market for true stereo sampling, there's a bumper crop of stereo samplers within a wide price range—from the Yamaha TX16W and Sequential Prophet 3000 to the E-mu Systems Emulator III, and all the way up to the Fairlight Series III and Synclavier. Since some stereo samplers have come down to near-affordability, this month's column will cover the pros and cons of stereo sampling. [*Ed. Note: Also check out "Real Stereo Samples From A Monaural Sampler" in* Keyboard, *Apr. '87.*]

I always like to hear the good news first, so let's start with the advantages of stereo sampling. Stereo is very important for sampling ambient (reverberant) sounds. Stereo reflections and reverberations provide portant clues to the ear about the size and ape of the acoustic space. If your goal is curately recreating a snare drum in a park- g garage, stereo sampling will provide a more spacious reverb than mono sampling. Mono sampling will reproduce the overall reverb, but the resulting sound will be the ten-millionth incarnation of the typical ambient snare sample—very one-dimensional. Including stereo ambience and effects in the sample itself also significantly reduces the number of effects devices needed at mixdown time.

Some samples exist only in an ambient environment. Sound effects are typically recorded (sampled) in the field, where ambience plays an important role in the effect. Sounds that move at high speeds across distances (such as trains, planes, and automobiles) require stereo sampling to recreate the doppler pitch-shifting effect that occurs as the vehicle approaches and passes at high speed. Although a mono sample will include the pitch shift, simply panning it to simulate a drive-by or fly-by just doesn't seem to do the trick. If you are involved with sound effects work, I highly recommend buying a stereo sampler.

However, as the ill-fated quadraphonic fad of the early '70s proved, more is not always better. As more channels are added to a recording (particularly a digital recording), more memory storage is required. In the case of samplers, this results in one of the following: higher price, shorter overall sampling time, or reduced sampling quality due to lower sample rate and/or lower-resolution data format.

When more memory is needed, it takes more disk space to store the samples, thereby increasing (typically doubling) the time it takes to load a new bank of sounds from the disk. If you use your sampler for live performance, the benefits of stereo samples may not outweigh the additional load time. Samplers with lots of memory have even begun to exceed the storage capacity of their disk drives, requiring more than one floppy disk to store an entire bank of sounds. (This should greatly increase sales of rubber bands to sampler owners as they attempt to keep the three Grand Piano #1 disks separate from the Grand Piano #2 disks.) This phenomenon emphasizes the importance of on-board and SCSI-compatible hard disks, which allow you to access large quanities of sample data quickly. If you can afford it, a hard disk is a luxurious feature to have.

> ***'If your goal is accurately recreating a snare drum in a parking garage, stereo sampling will provide a more spacious reverb than mono sampling.'***

If high sampling rates are important to you, check the maximum stereo sampling rate (this may differ from the mono rate) before you buy a stereo sampler. The Yamaha TX16W is capable of high sampling rates (up to 50kHz) for mono samples, but has a maximum sampling rate of 32kHz for stereo sampling. This is probably due to speed limitations in the digital circuitry—the analog-to-digital converter may simply be too slow to simultaneously convert two channels of data at a high sampling rate. As I discussed in my Dec. '87 column, the problems inherent in multiplexing several channels of audio through a single digital-to-analog converter can also result in degradation of the audio quality.

Voice allocation requirements (how the sampler uses its output channels/voices to allow polyphonic playback) are also doubled when using stereo samples. For example, an eight-voice sampler can play eight voices (notes) of mono samples, but only four notes of stereo samples. I highly recommend choosing a stereo sampler that has at least 16 voices, providing full eight-note polyphony when playing stereo samples. The same is true for direct outputs—if you plan to use stereo samples you may need twice as many direct outputs (for EQing and processing of the separate channels/voices).

If you can afford the extra memory, have patience while the disk loads, and don't try to play too many notes, you're still not out of the woods. Quick, what do you consider to be the biggest hassle about sampling? If you answered "looping," you're with the majority of sampler users. Well, here comes more bad news: Looping stereo samples can be more difficult than looping mono samples.

Although many stereo samples consist of audio that is fairly consistent between the left and right channels, problems arise when the sound sampled on one channel is significantly different from the sound sampled on the other channel. In this case, loop start and end points that produce a smooth loop on one channel may produce a bad loop (clicky, glitchy, etc.) on the other. The only way to remedy this situation is to provide independent loop start and end points for each channel (I don't think any of the currently available stereo samplers include this feature). However, if the left channel and right channel loops are different lengths, the two channels will slowly drift out of phase (and eventually completely out of sync) as the loop repeats. (Personally, I'm waiting for someone to introduce the first quadraphonic sampler. Now that should make looping really interesting!)

Despite these problems, stereo sampling can be very useful for ambient samples, flying in stereo sections such as backing vocals, sound effects, and sounds that include a lot of intrinsic stereo motion. But stereo sampling is not for everybody. Who knows? In some situations, it may even be more trouble than it's worth.

An alternative to true stereo sampling is stereo playback of mono samples through the auto-panning, delay effects, and so on, provided by the sampler. (The E-mu Systems Emax is a good example of a mono sampler with some useful stereo playback effects—dynamic panning, chorusing, delay, etc.). These stereo effects can be used to add motion to the sound, without the drawbacks of true stereo sampling. ■

Peter Gotcher is the president of Digidesign, a music software company specializing in digital sampling technology.

TECHNOLOGY

SOFTWARE FOR MUSICIANS

STEVE DE FURIA

THE LAST WILL AND TESTAMENT OF MUSIC MATH

FINALLY, IT'S TIME TO FINISH UP OUR Music Math program. As of the last revision the program was able to do each of the necessary calculations and display the results. Now we want to expand it so that it will show us the durations and loop sizes for all common rhythm values at once. Below are updated versions of the three subroutines we need to modify: CalcDurations, CalcLoopSizes, and DisplayTable. Replace last month's versions with these and you'll be ready to go.

The modifications to CalcDuration and CalcLoopSizes are very straightforward. Last month we verified that our formula would work for quarter-notes, so all we have to do is add a separate formula for each rhythmic value. The original formula (see my Jan. '88 column) was:

Duration = 60/(Tempo * DurationUnit)

The only thing that really changes from formula to formula in the new subroutine is the duration unit.

Similar modifications are made in CalcLoopSizes. A separate loop size calculation is performed for each duration. Now that we have all of these new values (28 in all), we have to modify the DisplayTable subroutine to display them all at once. To do this, I've created a simple table of rows and columns. Each row shows the duration and loop size of a different rhythmic value (duple and triple). In order to get the table to line up properly on the screen, I used mono spaced font—each character is the same number of pixels wide. PRINT USING statements are used to set the format and spacing for the columns. When you run the program you will see a table of duration and loop sizes for 28 common rhythmic values. The table will be automatically recalculated whenever you enter a new tempo, sampling rate, or phrase time.

Look back over the previous columns and review the way this program progressed from a basic design to a completed, useful piece of software. Can you see the benefits of using the top-down approach? You will find that your programming is more effective if you structure your designs and concentrate on the big picture before getting into the little details. Also, I hope this showed you that you can create useful music software without necessarily dealing with MIDI interfaces or sys-ex codes.

This is a perfect example of a do-it-yourself application. It's the kind of thing that's too small for a commercial developer to produce, but it's definitely useful to have. Although it took three months to cover it here, it only took a couple of hours to write. I've used it frequently enough (and given away enough copies) since then that I know those hours were well spent.

By the way, I know that I said the program is finished, but no program is ever really complete. It's impossible to leave them alone. How about modifying it so that it can give you a printout of the table? And don't forget to add some error-checking to those INPUT statements in SetRate, SetTempo, SetLength, SetRUnit, and SetRNumber. ■

Steve De Furia is a studio musician and music software consultant.

These updated subroutines are for a MIDIBASIC program that figures a wide variety of musical calculations such as sample loop sizes, durational values, etc.

```
'>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>> Music Math V 0.3 <<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<
'                      A basic example in program design by Steve De Furia
'                               Written using MicroSoft BASIC™



'>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>  Updated Sub Routines  <<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<
DisplayTable:                                    'show the current values of all items
  PRINT:PRINT
  PRINT TAB (25) "Note Durations "               'title of table
  CALL TEXTFONT(4)                               'use a mono space font (Monaco) for column alignment
  CALL TEXTSIZE(9)                               'this size is built into most system files
                                                 'print column labels
  PRINT"Rhythm Unit"; TAB(16) "Second(s)";TAB(26) "Loop Size";TAB(41) "Rhythm Unit";
  PRINT TAB(60)"Second(s)";TAB(70)"Loop Size"
    'print duration table data
  PRINT "Whole      ";         :PRINT USING "|####.###   |###,###|     ";D1,L1;
  PRINT "Whole Triplet ";      :PRINT USING "|####.###   |###,###|  ";D1T,L1T
  PRINT "Half       ";         :PRINT USING "|####.###   |###,###|     ";D2,L2;
  PRINT "Half  Triplet ";      :PRINT USING "|####.###   |###,###|  ";D2T,L2T
  PRINT "1/4        ";         :PRINT USING "|####.###   |###,###|     ";D4,L4;
  PRINT "1/4   Triplet ";      :PRINT USING "|####.###   |###,###|  ";D4T,L4T
  PRINT "8th        ";         :PRINT USING "|####.###   |###,###|     ";D8,L8;
  PRINT "8th   Triplet ";      :PRINT USING "|####.###   |###,###|  ";D8T,L8T
  PRINT "16th       ";         :PRINT USING "|####.###   |###,###|     ";D16,L16;
  PRINT "16th  Triplet ";      :PRINT USING "|####.###   |###,###|  ";D16T,L16T
  PRINT "32nd       ";         :PRINT USING "|####.###   |###,###|     ";D32,L32;
  PRINT "32nd  Triplet ";      :PRINT USING "|####.###   |###,###|  ";D32T,L32T
  PRINT "64th       ";:        :PRINT USING "|####.###   |###,###|     ";D64,L64;
  PRINT "64th  Triplet ";      :PRINT USING "|####.###   |###,###|  ";D64T,L64T
  CALL TEXTFONT(1)                               'reset to original font
  CALL TEXTSIZE(12)                              'reset to original size
  PRINT:PRINT
                                                 'format and display the currently selected values
```

```
  PRINT"  [S]ampling Rate :",Rate
  PRINT:PRINT "  [T]empo (1/4 note)";
  PRINT TAB(18) "[P]hrase Time",TAB(32)"[R]hythm Unit",TAB(48)"[N]umber of Notes"
  PRINT USING "####.##" ;Tempo;:PRINT " BPM";TAB(14)" ";
  PRINT USING "####.###"; PTime;:PRINT" seconds";
  PRINT TAB(32) "1  /";:PRINT RUnit%;"Notes";:PRINT TAB(52)UnitNumber%
RETURN



CalcDurations:                               'calculate the duration time values for the display table
              Normal                                   Triplets
  D1 = 60/(Tempo * .25)          :        D1T = 60/(Tempo * .375)          'whole notes
  D2 = 60/(Tempo * .5)           :        D2T = 60/(Tempo * .75)           'half notes
  D4 = 60/(Tempo * 1)            :        D4T = 60/(Tempo * 1.5)           'quarter notes
  D8 = 60/(Tempo * 2)            :        D8T = 60/(Tempo * 3)             '8th notes
  D16 = 60/(Tempo * 4)           :        D16T = 60/(Tempo * 6)            '16th notes
  D32 = 60/(Tempo * 8)           :        D32T = 60/(Tempo * 12)           '32nd notes
  D64 = 60/(Tempo * 16)          :        D64T = 60/(Tempo * 24)           '64th notes
RETURN


CalcLoopSizes:                               'calculate the Loop size values for the display table
'             Normal                                   Triplets
  L1 = D1 * Rate                 :        L1T = D1T * Rate                 'whole notes
  L2 = D2 * Rate                 :        L2T = D2T * Rate                 'half notes
  L4 = D4 * Rate                 :        L4T = D4T * Rate                 'quarter notes
  L8 = D8 * Rate                 :        L8T = D8T * Rate                 '8th notes
  L16 = D16 * Rate               :        L16T = D16T * Rate               '16th notes
  L32 = D32 * Rate               :        L32T = D32T * Rate               '32nd notes
  L64 = D64 * Rate               :        L64T = D64T * Rate               '64th notes
RETURN
```

TECHNOLOGY

COMPUTERS ON-LINE

SELMAN & LOURIK

MEGA ATARIS, APPLE MEETS MIDI, PS/2 NOISE, & VAPOR TRAILS

EVER NOTICE HOW COMPATIBILITY IS in the eye of the beholder? Take IBM's PS/2 computers. Some of the guys here in the hole just requisitioned an IBM Model 30. Our purchasing agent was assured by a salesperson that it would be able to run whatever applications we'd been running on our older IBM PCs and clones. But when the unit showed up, there were gasps all around. Seems no one put two and two together early enough to notice that our shiny new Model 30 had a single 3.5" disk drive in addition to its internal hard disk. All our existing IBM applications were on standard 5.25" floppies. We wanted to check out Leland Smith's Score program from Passport, Voyetra's Sequencer Plus, Powell's Texture, and Bacchus' TX81Z graphic editing package. We were in the mood to make some serious music, but had 1.75" of excess floppy to deal with. We tried folding the disk in half, but then it was too thick to fit in the slot. What to do, what to do?

After a couple of phone calls we found that Passport wasn't shipping 3.5" versions of Score yet, but were definitely planning to ffer Score in both 5.25" and 3.5" form. As for heir other IBM programs, there are no plans o offer them on anything but 5.25" floppies. acchus was not offering their software in 3.5" form at all. Voyetra reported that dealers were hesitant to stock the new format, but that if a customer requested it, a 3.5" copy could be ordered. If the customer buys a 5.25" version to begin with, the Sequencer Plus warranty card has a place on it where the 3.5" backup copy can be ordered. Roger Powell told us that until user demand gets up (and it *is* on the rise), customers can special-order Texture on a 3.5" disk. If they bought a 5.25" version, it can be traded for a 3.5" copy for $10.

Of course, the other way to deal with the problem is to get IBM's 4869 5.25" external drive. We did just that to avoid the hassle of waiting for the 3.5" versions of various programs to arrive. After getting our larger disk drive, we found that the Bacchus librarians worked just fine on the Model 30, but the TX81Z graphic editor wasn't compatible with IBM's built-in graphics card. So much for 100% compatibility sales hype. The other software mentioned above is compatible. The lesson to be learned is try before you buy. If the salesperson insists there won't be a compatibility problem, tell them you've got to see it to believe it.

WHEN WE ASKED, A COUPLE MONTHS back, if anyone remembered the Amiga, and pointed out that more and more Amiga music software was appearing a couple months back, we were barraged by irate and incensed Amiga owners who somehow felt that we didn't like the Amiga. Not so. We're delighted to be able to grab our Amiga back from the art department and start using it in a musical context. A spokesman for Commodore told us that the Amiga 500 sold incredibly well over the '87 Christmas season, so it looks like the Amiga will be around for a while. And that means that you'll be able to look forward to more Amiga music software in the near future.

On another note, if you're looking for an Amiga-to-MIDI interface, make sure you specify which model Amiga you're buying for. The 1000 requires an interface with a pin configuration that's different from that required for either a 500 or a 2000.

ATARI IS PLANNING TO MARKET THEIR new Mega computers (the Mega 2 and Mega 4—STs with two and four megabytes of internal RAM) in music stores. In fact, Atari exhibited for the second time in a row at the NAMM show (see page 42 for highlights). Atari claims that 10% of all the STs sold are being used primarily for musical applications. The new models are designed to run more complex music programs that require huge amounts of RAM. Other features include a separate keyboard, battery-backed-up real-time clock, and a buss for plugging in add-on boards and peripherals. The Mega 2 lists for $1,699 and the Mega 4 is $2,399.

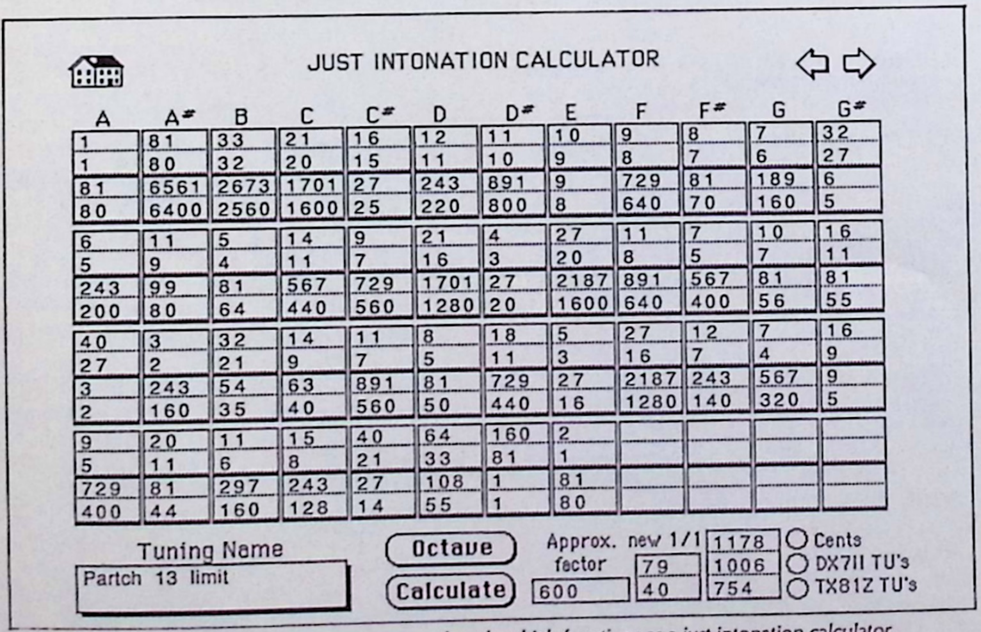
Atari Mega 4 computer.

The word on the street was that Atari's aggressive approach to the music market netted them 400 new music dealers at NAMM. However, the real story, according to Larry Samuels of Atari, is that Atari plans to sign up 75 to 100 new music dealers (in addition to a base of 150 existing music stores). These new dealers will be selected from "considerably more leads than that."

THE BIG NEWS IN APPLE LAND IS THAT Apple not only released their own one-in, one-out MIDI box ($99) for the Mac and

Continued

Tom Selman and David Lourik are neither Niven and Pournelle nor Siskell and Ebert. They work in a high-tech industry related to music and entertainment. Jeff Rona is the president of the MIDI Manufacturers Association. He has written programs for Roland, and is currently paying the rent by doing studio work as a synthesizer player.



JUST INTONATION CALCULATOR

A	A#	B	C	C#	D	D#	E	F	F#	G	G#
1	81	33	21	16	12	11	10	9	8	7	32
1	80	32	20	15	11	10	9	8	7	6	27
81	6561	2673	1701	27	243	891	9	729	81	189	6
80	6400	2560	1600	25	220	800	8	640	70	160	5
6	11	5	14	9	21	4	27	11	7	10	16
5	9	4	11	7	16	3	20	8	5	7	11
243	99	81	567	729	1701	27	2187	891	567	81	81
200	80	64	440	560	1280	20	1600	640	400	56	55
40	3	32	14	11	8	18	5	27	12	7	16
27	2	21	9	7	5	11	3	16	7	4	9
3	243	54	63	891	81	729	27	2187	243	567	9
2	160	35	40	560	50	440	16	1280	140	320	5
9	20	11	15	40	64	160	2				
5	11	6	8	21	33	81	1				
729	81	297	243	27	108	1	81				
400	44	160	128	14	55	1	80				

Tuning Name: Partch 13 limit

Approx. factor: 600

new 1/1: 79 / 40

1178
1006
754

One card from Robert Rich's shareware Hypercard stack, which functions as a just intonation calculator.

MAKE ARRANGEMENTS WITH YOURSELF.

RANE
POWER
POWER
INPUTS
1
2
3
4
LEVEL
LEVEL
LEVEL
LEVEL
HEADPHONE
1
2
LEVEL
LEVEL
1
2
HM42
HEADPHONE
MIXER

Here's a tidy little tool from Rane that lets you mix down four separate stereo programs (eight channels) and listen to the results through either of two independent stereo headphone amplifiers. All for a fraction of the cost of a conventional eight channel mixer.

MIDI MIXDOWN MACHINE.

The HM 42 will enable you (and your producer, of course) to listen to a variety of combinations of sequencer-driven keyboards and drum machines through independent headphones, and even send a separate mixed-down program to a tape recorder at the same time. Or, MIDI-link several keyboards together and listen to these in whatever mixed combination gives you the sound you're looking for.

REHEARSAL STUDIO IN A BOX.

Plug keyboards, drum machines, guitar amps and other line-level equipment into the HM 42, and practice at ear-shattering levels that no one else can hear. You can even plug an HC 6 Headphone Console into the back of the HM 42 so that six more colleagues can join in or just listen.

MULTI-TRACK MONITORING AND MIX-DOWN.

If you're single-handedly laying down tracks on a 4 to 8 track reel-to-reel machine, use the HM 42 to monitor sync tracks while recording, then listen to the final mix and record the results on a cassette machine in stereo.

EXPANDABLE, EVEN.

The HM 42 has Expand In and Out, so that two or more units can be linked together. Four people can listen to sixteen mono keyboards and drum machines with just two HM 42's. What a party.

If your needs call for a compact, very affordable combination mixer and headphone amplifier, make arrangements to take a listen to the HM 42 at your local Rane dealer.

Rane Corporation, 6510 216th Southwest, Mountlake Terrace, WA 98043. 206/774-7309.

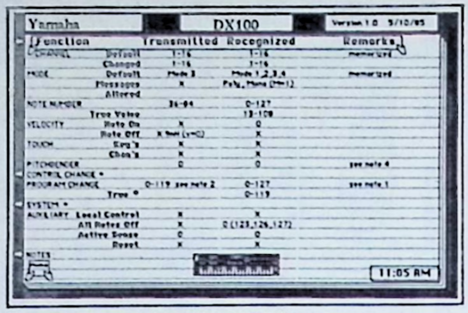
RANE

IIGS, but they exhibited at the NAMM show. This means that Atari, IBM, Commodore, and Apple have all noticed the enormous potential of the music market. Although we're sure we'll have to wait until hell freezes over to see IBM at a NAMM show, it can't be long before Commodore jumps in.

What did Apple do at NAMM? They announced their plan to address the music market through select computer dealerships who will be working closely with local music stores. The idea is that the music stores will send customers looking for a computer down the street to the computer store. Likewise, the computer store will send their music customers to the music store for musical gear.

HYPERCARD USERS HAVE BEEN ASKING if anyone has developed any tools that will allow Hypercard to access the serial ports to do MIDI kinds of things. HyperMIDI is a stack that contains the appropriate resources for Hypercard to talk MIDI. The resources can be directly installed into other stacks via ResEdit. Nigel Redmon, HyperMIDI's author, tells us that a PD (public domain) version of the program can be downloaded from CompuServe and PAN. There's also an update in the works.

Southworth also has a PD stack that will allow Hypercard to read and play MidiPaint files. Look for it on CompuServe and PAN too. Anyone else know of others?



Yamaha		DX100		Version 1.0 5/10/85
Function		Transmitted	Recognized	Remarks
CHANNEL	Default	1-16	1-16	memorized
	Changed	1-16	1-16	
MODE	Default	Mode 3	Mode 1,2,3,4	memorized
	Messages	x	Poly, Mono (M=1)	
	Altered			
NOTE NUMBER		36-96	0-127	
	True Voice		13-108	
VELOCITY	Note On	x	o	
	Note Off	x 9nH (v=0)	x	
TOUCH	Key's	x	x	
	Chan's	x	x	
PITCHBENDER		o	o	see note 4
CONTROL CHANGE *				
PROGRAM CHANGE		0-119 see note 2	0-127	see note 1
	True *		0-119	
SYSTEM *				
AUXILIARY	Local Control	x	x	
	All Notes Off	x	o (123,126,127)	
	Active Sense	o	o	
	Reset	x	x	
NOTES				

Information on the DX100 MIDI implementation, as displayed in John Amaral's Hypercard stack.

A couple of other useful stacks crossed our desk this month. The first is non-vapor shareware on alternate tunings from Robert Rich's Soundscape Productions (Box 8891, Stanford, CA 94305). Called JI Calc (just intonation calculator), this stack could be worth its weight in gold for anyone who is experimenting with just intonation. It allows you to set ratios between intervals and calculates the frequency of each note in an octave in cents or Yamaha's tuning units (for either the DX7II or the TX81Z). The disk is available for $10 directly from Rich. You may also be able to download it from some of the bulletin board services.

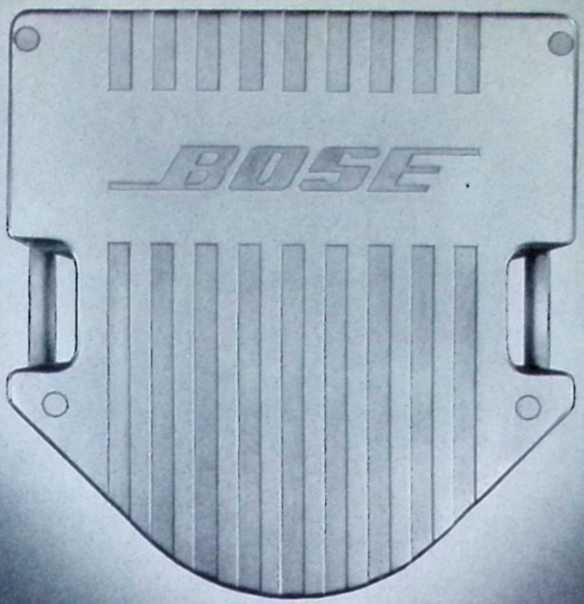
The second stack is from John Amaral of notorious Musicworks vaporfame. The stack is what you might call a disk in process. Then again, you might just call it vaporware. But it's potentially cool vaporware in that it's a good example of what an enterprising mind can come up with using Hypercard, so we'll waste some space on it anyway. The demo stack we have includes a MIDI Specs section, a glossary of MIDI terms, a trouble-shooting guide, and so on. The Specs section includes details on the MIDI implementations of various instruments (currently, the only one in the stack is a DX100). The glossary is unimplemented, and the trouble-shooting guide lists a table of contents but no entries yet exist. We're talking a very useful application of Hypercard here, but the stack is vaporous at this point in time. ■

JEFF RONA
SOFT-SPEAK COMPUTER TERMS

HERE IT IS, THE FIRST ANNUAL QUASI-random, highly dubious *Keyboard* Glossary of Computer Terms. Wait no longer as the mysteries of the strange language known as "soft-speak" are unravelled before your very eyes. Clip it out and carry it with you. Study it carefully before you attempt to enter a music store, computer store, or high school reunion.

- ***Artificial Intelligence.*** The ability of a computer to mimic aspects of human intelligence, sometimes referred to as real intelligence. Critics of AI complain that it is impossible to mimic something that has not been proven to exist.
- ***Bug.*** Sometimes referred to as a feature, also undocumented feature. Bugs got their name from the days of computers that used actual switches, instead of chips. A problem with one of these old computers was traced to a small insect that lodged itself into one of the switches causing an error in the system (both the computer's and the bug's). While some programmers admit there is no such thing as a bug-free program, it is generally considered that any program that has all of its bugs fixed is either obsolete or no longer in use.
- ***Copy Protection.*** The attempt to keep the people who buy software from using it easily. Copy protection was designed by Dr. Montgomery D. Upgrade, the inventor of the $15 safety backup disk in 1978.
- ***Demo Disk.*** A program with key features (and all bugs) removed for promotional reasons.
- ***Documentation.*** The materials that accompany a hardware or software product. Though originally intended to teach the proper use of a product, documentation today consists mainly of three things: (1) licensing agreements for copy-protected software; (2) bug lists; and (3) a card to mail in to receive a discounted copy of the product just purchased when (if) updates are finally ready to ship.
- ***End User.*** Not to be construed as an affront to safe sex, "end user" is a term used by software and hardware programmers to refer to the actual purchasers of their products. It is a term often used with contempt, as in the sentence, "If enough end users complain about that bug, we'll have to fix it."
- ***Hard Disk.*** A computer device capable of losing or destroying large amounts of information and copy-protected software. More efficient and faster than floppy disks, hard disks can lose 20, 40, 80 megabytes of data or more.
- ***Modem.*** A small device which when attached to a computer allows the downloading of nude pictures, pirated software, and sampled fart noises. Modems were developed by the telephone company as a means for raising revenues without raising rates.
- ***Public Domain.*** Software written by altruistic programmers without desire for compensation. Usually found on electronic bulletin boards, public domain software consists mainly of programs that do hat inventory, 3-D outboard motor plots, and random dinner menu/fortune cookie message generation.
- ***Real Soon Now.*** An expression used by product support personnel and marketing people (they seem to be coming up a lot in this glossary), which actually means "we have no idea when it will be ready."
- ***Release Date.*** A term used by software and hardware marketing people to indicate that a product is actually being created and in all likelihood will be released. Any specific date mentioned as a release date (such as "will be released July 1") is fictitious and is used only to produce grammatically correct sentences.
- ***SCSI.*** Pronounced "scuzzy," this word was created by computer scientists (well-known for their wit and humor) to see how many of their colleagues could say it without breaking into laughter. Scuzzy interface ports exist on some non-computer hardware, but are seldom connected to anything.
- ***Two Weeks.*** The phrase typically given to customers (see End User) for when the release/version/update/repair will be ready. While sounding like a specific time, "two weeks" is actually an industry code for a complex equation which can give results of anywhere from 18 to 96 days.
- ***User-Friendly.*** The term most often used by software and hardware marketing people when they can think of nothing else to say about a product. "User-friendly" is to computer ads what "all-natural" is to granola bar ads and "performance" is to hair spray ads. Technically, "user-friendly" means "can be operated with intermittent success by some user somewhere."
- ***Version 1.0.*** Refers to a program released with few enough bugs and enough fully implemented features to get a good review. Version 1.0 programs are to software what pencil sketches are to oil paintings.

Next month: Rona's list of 12 Big Computer Lies! Don't miss it. ■



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At Kurzweil, we don't think the instrument you play should build fences around your imagination. So we developed our revolutionary 1000 Series to help turn it loose. The 1000 Series delivers authentic Kurzweil sounds with more voices, more programming power, more creative freedom than you ever thought possible at prices you never thought possible.

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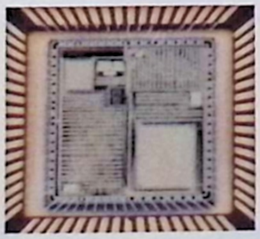

Thanks to our new VLSI microchip, Kurzweil 1000 Series modules start at just under $2000. VLSI has enabled us to pack each Series 1000 instrument with up to 120 of the same impeccable, 16-bit floating point, digitally-sampled sounds found on the legendary Kurzweil 250.® Choose from the 1000 SX String Expander Module, 1000 HX Horn Expander, 1000 GX Guitar Expander, 1000 PX Professional Expander (which provides a varied collection of our most famous samples) or the K1000 (the keyboard version of the 1000 PX).

Freedom of Expression.

The 1000 Series' generous polyphonic capabilities free you from the expressive limitations of 12-voice or 16-voice systems. The 1000 PX and K1000 offer the power of 24 voices while the 1000 SX, 1000 GX and 1000 HX each have 20 voices. And, if you need more voices, you can combine all four 1000 Series modules to create an 84 voice, 8-output super-system. So go ahead. Stack voices to your heart's content. Build complex, multi-voiced sequences. Go for those big, two-fisted chord shapes. The 1000 Series modules give you miles of sonic territory to roam at will.

Freedom of Choice.

The 1000 Series is truly democratic too. Three different operating modes let everyone—from novices to advanced programmers—benefit from the 1000 Series' bountiful capabilities. In Play Mode, you can use those great Kurzweil sound programs just as they are. Simply select a program and play. The Compiled Effects mode lets you apply a variety of popular effects to any of the preset sound programs. And the Modular Editing mode takes you deep inside the 1000 Series' voice architecture.

So stand up for your rights. You owe it to yourself to check out the 1000 Series. For more information, visit your nearby Kurzweil dealer. Or write to us at Kurzweil Music Systems, Inc., 411 Waverley Oaks Road, Waltham, MA 02154, (617) 893-5900. In Canada, write to Heinl Electronics Inc., 16 Mary Street, Aurora, Ontario L4G 3W8, (416) 727-1951.

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Music Systems

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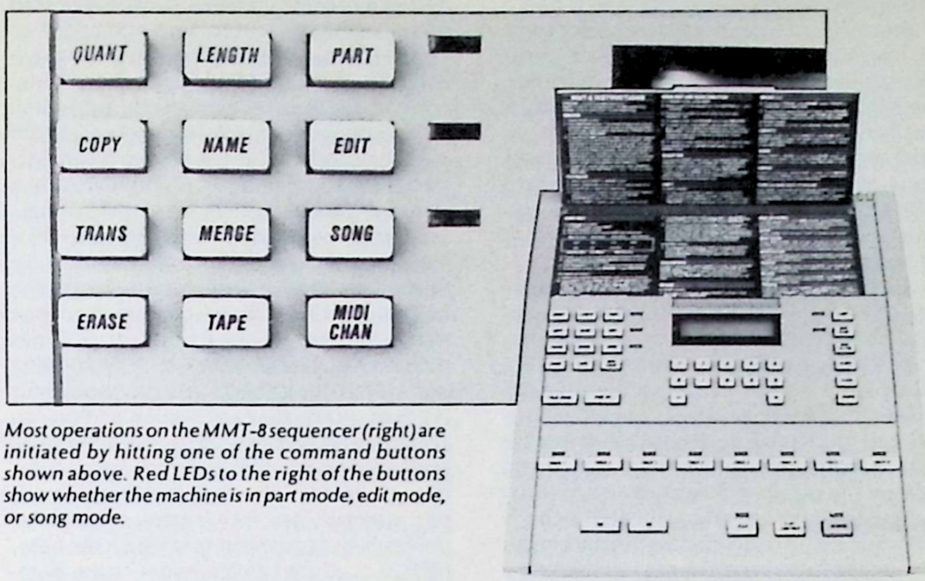
* $1995 suggested retail price for 1000 SX and 1000 HX. $2,395 suggested retail price for 1000 GX and 1000 PX. $2,595 suggested retail price for K1000. All specifications and prices subject to change without notice.

K E Y B O A R D
R E P O R T

ALESIS MMT-8
MIDI SEQUENCER

By Jim Aikin



Most operations on the MMT-8 sequencer (right) are initiated by hitting one of the command buttons shown above. Red LEDs to the right of the buttons show whether the machine is in part mode, edit mode, or song mode.

MAYBE THE SMOKE IS BEGINNING TO clear from the tremendous boom in electronic music products that we've been seeing in the past few years. Maybe we've gotten past the point where "more features, lower price" is the mantra that will guarantee enlightenment (or anyhow wealth) for the fledgling manufacturer. Maybe we're reaching a point where instrument designers who want to stay competitive have to actually listen to input from users and make their product not only cheap and powerful but usable and free of design flaws.

Maybe. In any event, Alesis is trying it, and they could be onto something. We do get the feeling that some companies throw products out on the market without bothering to get a real firm grip on what musicians want and need. There are a lot of devices out there that contain wonderful innovations right alongside infuriating oversights. So it's refreshing to see a unit like the MMT-8 sequencer, which has obviously been designed from the ground up by paying close attention to what musicians are saying. This little box has exactly the features that will be the most useful to most first-time sequencer buyers, and the design compromises that were made are, in our opinion, sensible ones. The method of operation is very easy to deal with, which is not the case on some sequencers we could name. And of course, the price is right. (If Alesis is setting out to make Ensoniq look like a high-end company, they're off to a great start.)

Overview. The MMT-8 is a pattern/song sequencer. Its memory stores 100 "parts" of up to 682 beats each, and the parts can be assembled in song lists of up to 255 parts each. Up to 100 song lists can be in memory at a time. Each part contains eight tracks, and each track can have MIDI data on as many channels as you'd like. Clock resolution is a hefty 96 ppq. (That's four times as much as the $5,000 Sequential Studio 440—which was, admittedly, under-designed.)

The front panel has plenty of little buttons, so hidden functions are kept to a minimum. These buttons have a soft, sexy feel, but on the unit we had for review they didn't respond real consistently. At times we could feel the button 'connect,' but the unit didn't see it, forcing us to press again more firmly. The buttons are arranged in several groups, with a numerical keypad just below the LCD display, a row of track select buttons across the center of the machine, global controls in a column at the right, and so on. The track select buttons, which are used both for muting and for selecting tracks for record and edit operations, have their own LEDs, which can be either lighted, unlighted, or blinking depending on the status of the track.

Both the layout and the operating system are well thought-out. Where multiple functions are accessed by the same button, the functions are always logically related to one another. Being pretty experienced at scoping out new sequencers, we were able to run through and understand all the features in less than two hours, with no mysterious data hiccoughs. (Also, if you get confused and don't have the manual handy, there's a pop-up lid that displays a command summary. Yamaha has been trying to do the same thing with those little pull-out cards on their rack-mount units, but this is *much* hipper.)

The 32-character LCD doesn't have an adjustable contrast control, but it is back-lit for easy viewing. Both parts and songs can be given 14-character names. As an added convenience, the display updates itself by beat number (or part number, when you're in song mode) during playback operations, so you can tell where you are.

Recording & Playback. Standard record, play, and stop/continue buttons are used to activate recording and playback. As on a drum machine, you can segue manually from one part to another by entering a new number while the current part is playing back.

MMT-8

Description: MIDI sequencer.
Features: Pattern/song architecture. Eight tracks per pattern. Punch-in recording. Standard editing commands, including erasing and copying individual data types. Individual event editing.
Memory: 64K bytes (battery-backed). Over 10,000 notes average. Loading and saving via data cassette or sys-ex dump.
Rear panel: MIDI in, out, thru. Tape (data and sync) in and out. Metronome click out. Start/ stop footswitch in. On/off switch.
Size: 10" wide x 12" deep x 2⅛" high.
List Price: $299.00.
Contact: Alesis, Box 3908, Los Angeles, CA 90078. (213) 467-8000.

When you hit the record button, you can either accept a default track (the lowest empty track) for your new recording, or override the default by hitting any of the eight track select buttons. If you're into accepting the defaults, the MMT will assign you a new track every time you hit the record button, allowing you to record a number of tracks with a minimum of fuss. If, on the other hand, you start by specifying a track, the MMT will assume that you want to do a number of takes on that track, and it will keep recording over previous takes until you tell it to stop. Once you understand which mode the machine is putting you into, you'll find this setup easy to use.

A loop button is provided so you can listen to a part (or a song) over and over. The unit goes out of record mode and into playback after one pass, however; looping doesn't give you drum-machine-style input. Too bad. During playback, the LCD shows what beat is playing. A pair of fast forward/rewind buttons can be used to advance or back up, either during playback or while the machine is stopped, making it simple to locate to the middle of long parts. It would be a little more convenient if the displayed beat number stayed where it was when you stopped the machine, instead of resetting to zero, so you could tell where you were in the middle of a long part. Oh, well. Nothing's perfect.

There is no automated punch-in recording. You can do manual punch-ins and outs by hitting the record button and then the stop button at any time during playback. All you have to do is make sure you've selected the proper track beforehand. This type of design is clean and simple, but it does have a potential down-side as well: If you accidentally hit the record button during playback, you will automatically be erasing whatever is on the currently selected track. This is only a problem if you have previously selected a track within this pattern manually for recording purposes. Unless you override its choice, the MMT-8 will always have selected an empty track for you to record on. In fact, if you call up a pattern on which all eight tracks contain material, it won't switch into record mode at all until you tell it what track you want to record over. This is an excellent safety feature.

Record filtering can be separately switched on or off for notes, after-touch, pitch-bend, controllers, program changes, and system-exclusive. Channel filtering allows you to set the machine to record on all channels, or only one. Tracks can be rechannelized for playback without affecting the data actually recorded in the track, so you can get the original channel assignment(s) back later if you need to. If MIDI echo is switched on, in order to pass the data input through to the output, the rechannelization of the track currently selected for recording will also be applied to the echo. (If your master keyboard will only transmit on one channel, you'll find this very helpful when hooking up outboard modules.)

Editing. The assumption in the MMT-8 is that you'll normally want to perform your edit operations on an entire part, or on the entire length of one of the tracks within a part. There is no direct way of specifying a region (such as between beats 9 and 16) within a track. It is possible, though not exactly simple, to chop a track apart, move part of it to another track, perform an edit operation on this temporary track, and then merge the resulting data back into the original track. If you need more precise editing, you can use the unit's event editing, which gives complete control over every aspect of the data. Event editing is always a cumbersome process, of course, but it's great to see it included on a sequencer in this price range.

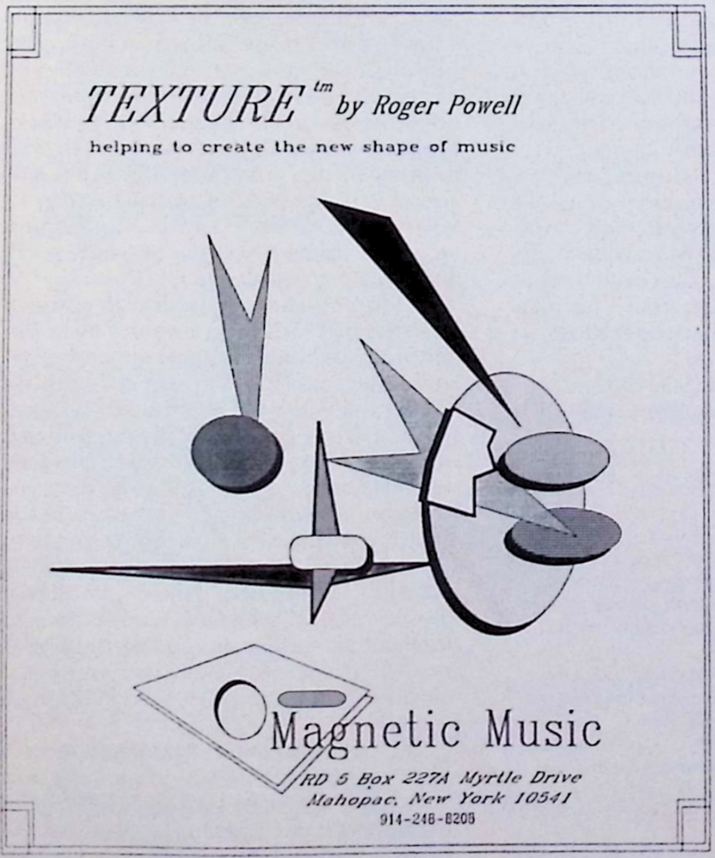
Transposing, quantizing, copying, erasing, appending, and merging can all be performed on tracks or entire parts. Tracks can be copied individually or in groups from one part to another. There are no fancy utilities such as velocity scaling, however. Quantizing is strictly to duplet and triplet rhythms. Four types of quantizing are available: You can adjust only the note starts, only the note ends, move both starts and ends to quantization points (which will sometimes tend to turn staccato notes into legato), or use duration-coherent quantizing, in which the note-off is moved the same amount as the note-on. The musical differences among these can be subtle, but you won't find many sequencers that offer so many choices.

You can increase or decrease the length of a part after recording into it, which can be very helpful. Empty beats can be added to either the beginning or the end, and if you should decide that you like bars 5 through 8 of a part but not bars 1 through 4, you can truncate the beginning.

Copying and erasing of tracks and parts can be performed on single MIDI channels of data within a multi-channel lump of stuff. Particular types of non-note data, such as controllers, pitch-bend, and after-touch, can also be selected separately for copying and erasing. This is a basic but essential utility that makes it possible to shuffle musical parts around with considerable freedom. If, for example, you've recorded a lead line with some pitch-bends and then started to feel unsure about whether you like the bends, you could copy the bend data to a separate track by itself, erase it from the lead track, and then mute and unmute the track with the bends in order to hear the line both ways. If you decide to keep the bends, simply merge the two tracks again.

The event editing mode lets you step through events in a track one at a time. For each event, you can change all the relevant types of data. With notes, for example, start time, duration, velocity, pitch, and channel can be edited. Events can also be inserted and deleted. We tried editing the start time of a note so that it moved forward past other notes, changing its position in the track list. We found that the machine handled this potentially confusing request without any trouble. It will even let you edit the system-exclusive bytes sent in by other devices, though only diehard data maniacs are likely to want to try this.

The neat thing about event editing is that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you can start and stop playback while in event edit mode, and the display will be updated constantly. If the note you need to fix is somewhere in the middle of a long part, you can stop playback when you hear it and only have to step backward through four or five events to find the offending one. Our only complaint is that when you're stepping through events one by one, they're not sent out over MIDI. It would be nice to be able to hear the material as you're editing it.

Song Mode. The MMT-8's song mode is pretty simple. The numbers of parts are entered in a list, and you can insert and delete items in the list, or change one part number to another, at any point. There are no repeat loops and no way of branching into any other song.

Each song step can have its own set of track mutes. This allows you to compose a single part that can have various kinds of material (drum fills, counterpoint lines, or whatever) cued in or out at various points in the song. What's missing from song mode are the little extras, like variable transposition or velocity shifts of parts at different steps in the song. To do this type of thing, you have to copy the part and edit the copy.

Tempo is stored with each song, not with individual parts, so the MMT-8 is not capable of programmed tempo shifts. It will do real-time manual tempo changes, though, so if you're patient you could lay down a sync track on tape that would go through whatever contortions you might need. Smooth tempo changes can be executed using a pair of increment/decrement buttons, or you can make them suddenly by typing in a new three-digit number.

Data Storage. At this price, you were expecting a disk drive? The MMT-8 has data cassette in and out jacks. You can store and load all the stuff in memory, or a single part or song. A verify function is also included. In addition, you can send the memory contents as MIDI system-exclusive data, which can be stored on any MIDI disk drive, such as the ones built into various synthesizers, or the generic sys-ex storage programs available for various computers. Curiously, there is no way to send or receive a single part over system-exclusive. If you need to transfer a part from one set of memory data to another, you'll just have to break out the old cassette deck.

The MMT-8's memory contents are retained, we're glad to report, when the unit is unplugged. We tried jiggling the power cord in and out a few times to see whether we could trash the memory this way, but the MMT continued to function just fine when we started it up again.

As long as we're on the subject of power cords, we should mention that Alesis is still using external AC adapters. There's nothing wrong with this; it prevents overheating problems, and also gets quicker FCC approval, we're told. At least they've added an on/off switch to the MMT—you know, the one that's missing from their processing gear. In a unit that could easily be used onstage, though, we'd like to see somebody invent a locking connector for the power cord. Being paranoid and compulsive about these things, we always worry that those slippery little minijack input plugs will pop out if anybody trips over the cord. The same thing could happen to a standard-voltage detachable cord, of course. Maybe this isn't a problem. What do you think?

Conclusions. What kind of MIDI sequencer are you looking for? If you need something with two zillion notes of memory, 3-D pitch-bend contour mapping, and a pop-up word processor, the MMT-8 is not for you. But with so many young (and not so young) musicians eager to get into MIDI sequencing for the first time, it's great to see an introductory-level box that has so much power and is so simple to use. The MMT-8 is definitely not a toy sequencer. While it doesn't boast the advanced editing features found on many computer programs, just about all of the basic stuff is here.

We could write out a wish list if we wanted to. The ability to store tempo changes in songs would be nice, and a built-in disk drive, and maybe definable regions for quantization, so you could handle those odd spots where you want to throw a triplet into the middle of a sixteenth-note line. But hey—considering all the stuff that this little box will do, we'd only sound like whiners. So we'll shut up now. It's a cool device. Check it out. ■

Thanks to Guitar Center of San Jose, Ca fornia, for letting us borrow the MMT-8 use in our review.

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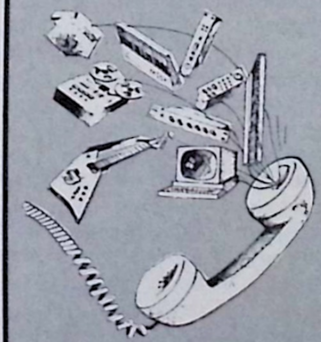

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KEYBOARD REPORT

Kurzweil K1000 keyboard.

KURZWEIL 1000 SERIES
SAMPLE PLAYING KEYBOARD AND RACK-MOUNT MODULES

By Mark Vail

HAVE YOU PROGRAMMED A NEW patch on your synthesizer lately? Do you run out of synthesizer voices just when your sequences are getting good? Are you really happy with the piano sounds in your sampler? How much would you pay for an abundance of primo acoustic piano, strings, wind, and guitar sounds? Does your chewing gum lose its flavor on the reverb overnight?

Some of these questions may apply to you. It's so easy to just find a good patch and use it when you're working on a new piece of music in your sequencer; stopping to program patches can take away from the flow of your composition process. Probably all of us have experienced the frustration of not having enough voices available at one time. And while the quality of sampled piano sounds is really improving, not everybody has it quite right yet.

One company famous for its sampled piano sound is Kurzweil. Their 250 piano reproduction brought digitized piano sound to new heights. These people know how to squeeze good sounds out of a couple of megabytes. Now they've repackaged some of the 250 sounds into new boxes labeled the 1000 Series. The Series is made up of four rack-mount expander modules and one keyboard version.

Kurzweil has played the rack-mount game before, with the K250 RMX expander, a keyboardless version of the 250 sampling keyboard (Keyboard Report, June '85), and the 150, a preset additive voice module (Keyboard Report, December '86). The 1000 Series includes the Professional Expander (1000 PX), the Guitar Expander (1000 GX), the Horn Expander (1000 HX), the String Expander (1000 SX), and the K1000 keyboard. These five units are multi-voice, poly-timbral wavetable synthesizer/sample players which feature some of the best sounds from the 250. Both the K1000 and the PX feature 24-voice polyphony, while the GX, the HX, and the SX provide 20 voices. But with the Kurzweil name branded on the front panels, these puppies don't come cheap. To be more precise, the SX and the HX list for $1,995, the PX for $2,395, and the K1000 for $2,595. (The 1000 GX was unavailable at the time of our review.) Are they worth the cover charge? Let's slip on our MIDIed fingerless Keyboard Report gloves and give them a tryout.

Overview. All the 1000 units share similar operations for programming and playing. A 32-character, two-line LCD screen displays the unit's current status. You must be reasonably close and straightaway to read the display, because the readout is green-on-green and no contrast control is provided. The front panel features a play/edit button, a MIDI mode/program layer button, two buttons for channel/menu selection, two buttons for program/parameter selection, and value increment/decrement buttons. The expanders also have a power button on the front panel.

In play mode, you can choose MIDI mode, step through the programs, and assign programs to MIDI channels. Each 1000 unit has a number of preset programs stored in ROM memory. The PX and HX each have 120 on-board presets, the K1000 has 115 presets, and the SX has 99 presets. (The GX reportedly stores 100 presets.) Each 1000 unit also has RAM space for 64 of your own programs.

Each 1000 has a number of 16-bit samples and digital wavetables available with which to create new programs. The samples are multi-sampled across the keyboard, and you can limit the range of a layer or program so the sound stays within its most effective range. We're told that some of the samples are multi-sampled vertically across the velocity range as well. As with most sampling setups, some of the split points between sample zones are quite obvious under close observation. Each of the expanders has its own variety of samples and single-cycle wavetables, as detailed below. Note that the samples and wavetables are resident in ROM and cannot be replaced.

A 1000 program contains up to four *layers*, each of which features a sample or wavetable, parameters to shape the output, and effects. For each layer, there are two LFOs, two ASRs (attack-sustain-release envelopes), two mixers, two inverters, two negators, two 2-segment envelopes (one unipolar for amplitude and the other bipolar for general purpose), and delay. In addition, there are two global LFOs and two global ASRs per MIDI channel. An ASR envelope may sound primitive compared to the multi-segment envelopes used on many instruments, but in fact the Kurzweil envelopes can be set to loop, so they offer more power than you might think. Waveshapes available for LFO control are sine, cosine, sawtooth, square, triangle, pulse, circular, stair, asymmetrical triangle, and white, red, green, and blue noise. The latter three noise waveforms are randomly generated, with emphasis in lower frequencies (red), middle frequencies (green), and higher frequencies (blue). All MIDI continuous controllers and switches are received and may be patched to any programmable control or modulation input. You can also program your own effects. Note that delay effects are produced by the sound generators themselves, so if you want echo, extra voices will be used. This is often a problem with an eight-voice synthesizer, but with 20 or 24 voices, it's not likely to get in your way too often.

Each layer of a program can feature its

own pan position between the stereo outputs, with nine possible positions from far left to far right. Also, pan position can be a function of MIDI key number; as you play up the keyboard, the sound will pan from left to right, or vice-versa. While modulation can't be routed to control panning of a layer, panning can be simulated by controlling the balance of two layers panned to opposite sides of the stereo field.

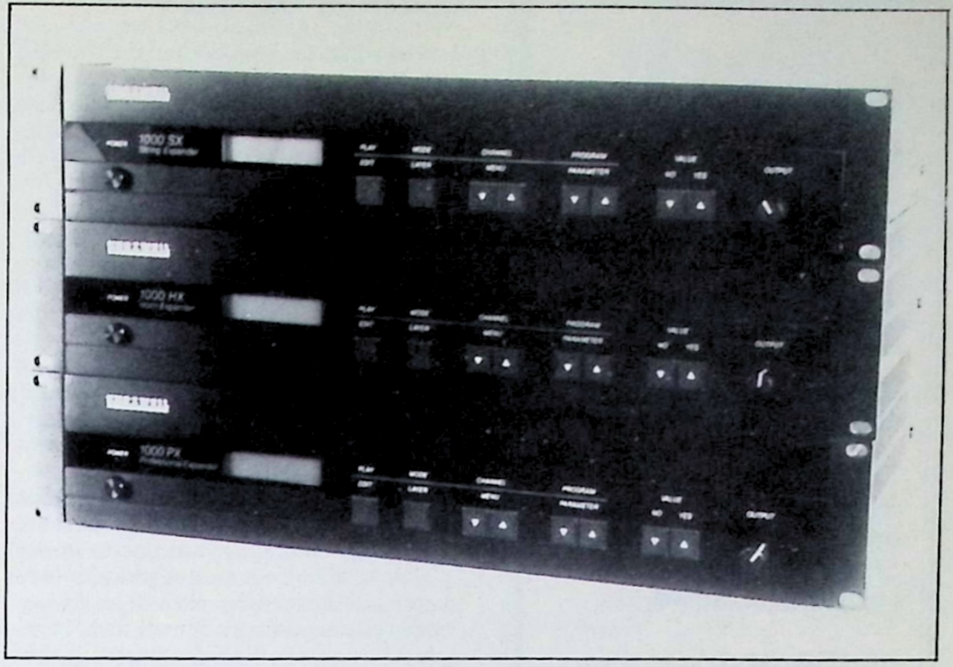
You assign programs to MIDI channels in play mode by changing to multi-mode, stepping through channels, and assigning a program to each channel. You can use an external MIDI controller or sequencer to change the programs. The 1000 units also include MIDI program mapping, so incoming program numbers can be assigned to any internal program, and each internal program can send any program number. While dynamic voice allocation is supported, you can impose a limit on the total number of voices available on a specific MIDI channel.

The 1000 uses a velocity map to define the relationship between the keystrike velocity data from a MIDI controller and the volume of the sound produced by the 1000. A series of velocity maps is provided in ROM for different velocity ranges and frequently used keyboards. You can also program your own velocity map. When you create a new velocity map, you are asked to strike a key twice, once lightly and once hard. The 1000 unit will then interpolate a linear loudness range based on your two keystrokes. You can name and save this velocity map in RAM, or you can do further editing of the velocity map before saving it.

Velocity-attack and -release response is programmable for each layer, and you can route it to control ASRs, LFOs, and pitch. Inverted velocity is also supported, which allows you to cross-modulate between layers so as to get a timbral change from velocity. This can be very effective in emulating an acoustic instrument; for example, using the HX, you could use a mellow sax with inverted velocity response for the soft notes and a growl sax with normal velocity response for the hard notes. Also available is an alternate attack control. For single-cycle waveform layers, this determines whether or not the waveform begins with a "click." For sampled sounds, turning this control on causes only the sample loop to be played. Another nice feature is that you can program the pitch-bend for each layer to be off, on, or to bend held notes only. Unfortunately, while pitch-bend is programmable, its range is limited to a minor third.

A pressure-sensitive keyboard can be used as a modulator, and some effects are programmable to respond to polyphonic key pressure as well as mono-channel pressure. Kurzweil kindly sent us their Midiboard along with the Series 1000 units, and we were quickly spoiled by the polyphonic after-touch control of the 1000s. This is possibly one reason for our disappointment with the K1000 keyboard (see below).

The 1000 Series features the same MIDI receive modes that were included in the Kurzweil 250, including a chain-link function. This allows you to connect up to twelve 1000 units together and access each unit separately by assigning it its own number.


Kurzweil 1000 SX, 1000 HX, and 1000 PX expanders.

An added attraction of the 1000 Series is the inclusion of intonation tables for non-equal temperament tunings. This is a master parameter, meaning all programs are controlled by the current intonation table. Sixteen temperaments other than 12-tone equal are available as presets. These include classic just, comma (two versions), Indian raga, Arabic, Bali/Java (three versions), Tibetan, CarlosAlpha, and Pythagorean (two versions). User scales are programmable as well. The alternate scaling is accomplished by individually detuning the notes between C and C by cents (up to ±1,200). One limitatio in this arrangement, however, is that you ca only program scales with 12 notes per octave the system is incapable of producing scale with greater than 12 notes in an octave. Thi anomaly becomes obviously and criticall apparent when you listen to CarlosAlpha, Kurzweil's implementation of the alpha tuning Wendy Carlos constructed for her album *Beauty In The Beast* [see *Keyboard*, Nov. '86]. The original alpha scale features 15.3 notes per octave, which means that there really is no true "octave" to this scale. Therefore, not only is CarlosAlpha an approximation of the original tuning, but it is also missing three notes between *B* and C! The other intonations presented in the 1000 Series appear to be accurate. The popularity of working with different tuning systems is gaining ground, and while we're happy to see Kurzweil implementing this feature in the 1000 Series, 12 notes per octave is a silly limitation.

The K1000. Probably the first thing you'll notice about the K1000 is that it looks an awful lot like Kurzweil's new Ensemble Grande Piano, which is geared toward the home consumer market. The K1000 does use exactly the same case as the Ensemble Grande Piano, minus the latter's built-in speakers. The K1000 probably has the same keyboard, too, which is unfortunate. The K1000's 76-note keyboard feels mushy and is not very responsive. On the unit we tested, the keys in the lower range seemed stiffer than those at the upper end. And although the K1000's voice architecture includes the capability to respond to after-touch, the keyboard of the K1000 isn't pressure-sensitive. Kurzweil states that they decided it was not cost-effective to include a pressure-sensitive keyboard with the K1000.

Continued

Kurzweil 1000 Series

Keyboard: K1000 only. 76-note, *E*-to-*G*, weighted action; attack and release velocity.

Voices: 24-voice, K1000 and 1000 PX; 20-voice, 1000 HX and 1000 SX; polytimbral polyphony with dynamic/programmable voice allocation; four-layer programmability with individual waveform/sample, keyboard range, envelope control, and effects for each layer.

Memory: 120 ROM presets in 1000 PX and 1000 HX; 115 ROM presets in K1000; 99 ROM presets in 1000 SX. 64 RAM spaces for user programs. Optional ObjectMover librarian software for Macintosh.

Interfacing: MIDI in, out, thru. Stereo 1/4" output jacks, detachable power cord. K1000 also includes two footswitch jacks (two footswitches included) and headphone output.

Features: 16-bit sampled waveforms and digital wavetables; polyphonic key or mono channel pressure sensitivity; 32-character, two-line LCD display; intonation tables for non-equal temperaments; preset and programmable effects.

Dimensions: K1000, 48-3/16" x 14-3/8" x 5-3/4", 55 lbs. 1000 Series Expanders, 17-1/4" x 14" x 3-1/2", 16 lbs.

List Price: K1000, $2,595.00; 1000 PX, $2,395.00; 1000 SX and 1000 HX, $1,995.00; ObjectMover, $49.95.

Contact: Kurzweil Music Systems, 411 Waverley Oaks Rd., Waltham, MA 02154. (617) 893-5900.

KURZWEIL 1000 SERIES

The K1000 features full-length samples, including grand piano, strings, choir, acoustic bass, vibes, horn, clarinet, trumpet, and organ. It also includes the following single-cycle wavetables: electronic piano, bell, harpsichord, sine, sawtooth, and "ah." The programs that come with the K1000 sound very good, but unless you like a mushy keyboard with no pressure sensing, you're probably better off buying the rack-mount 1000 PX to be controlled from a keyboard that features pressure sensing.

On the back panel of the K1000 are two footswitch inputs, programmable for functions including sustain, sostenuto, freeze, and modulation switching. (Two footswitches come with the K1000.) The instrument we received for review apparently had a bad footswitch jack, because we were unable to get the sustain function to work.

The K1000 also includes a headphone output jack, a data slider, pitch-bend (spring-loaded) and modulation wheels, three bank-select buttons, and ten program-advance buttons. One novel and very useful feature of the modulation wheel is that it has a center detent position; you can program the wheel so that two effects are available, depending on which way you push it.

The Expanders' Sounds. Kurzweil has selected a collection of full-length samples from the 250 for distribution in different configurations for the 1000 Series modules. The PX features the same complement of waveforms and samples as the K1000. Considering the wider range of available on-board samples and waveforms, and its 24-voice capability, the PX offers more power than the other three units. Still, by combining units, you gain the capability of accessing a greater number of high-quality sampled sounds than most systems can offer.

The PX features one of our favorite preset sounds in the whole 1000 Series—a killer acoustic bass program. It's as if Ron Carter stepped into the room with his bass: beautiful . . . V.S.O.P. . . . vintage! While some people may feel that this one sound may justify the price, we're not quite convinced. On the whole, though, the majority of programs presented in this unit are very usable, especially when you take advantage of the polyphonic after-touch.

The sound of the HX takes some getting used to, mainly because of the buzzy quality inherent in the samples themselves. Full-length samples in the HX are trumpet, muted trumpet, trombone, and sax. Wavetables include alien mutant, alien growl, sine wave, and some others. Because of the overtones prevalent in wind instruments, playing keyboard clusters tends to produce a rather aggravating, almost out-of-tune sound. This is not to say you can't play chords; when you space the notes in a chord the way a wind section would, the HX sounds fine. When the HX is layered at an equal volume with other sounds, the resultant output seems dirty and buzzy. However, when the HX is prominently featured in the mix, it's obvious that it produces high-quality wind instrument sounds. In our opinion, the feature program

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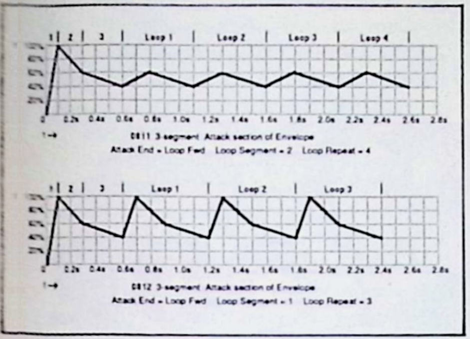
in this unit is the muted trumpet; did Miles step into Kurzweil's sampling studio or what? We do wonder why electric piano programs have been included in this unit. They sound awful compared to similar programs in the PX and are inappropriate in a horn expander.



This diagram from the Series 1000 manual shows some of the shapes that can be created with envelope looping.

As with the HX, the samples in the SX feature a great deal of high-frequency content. The intent here, along with the inherent quality of sampling an acoustic instrument, is to accurately reproduce the sound of a string instrument, right down to the rasp of the bow on the strings. The SX includes samples of strings, violin, cello, and pizzicatto strings, as well as a synth-string waveform and sine wave. Once again, the SX really shines when the string sounds are featured, and playing chord clusters works much better than on the HX, probably due to the overtones inherent in strings as opposed to wind instruments. Polyphonic pressure control of the string programs is really a superb function; you can play individual melody lines within a lush chord, a very powerful and useful effect.

Programming. To edit programs in a 1000, you step sequentially through parameters within menus to alter specific values. A menu is a collection of similar parameters. There are three types of parameters: master, program, and layer. Master parameters are global throughout a 1000, presiding over program and layer settings. Master parameters include velocity maps, transposition, MIDI control, intonation table, and program mapping. Program parameters affect only the layers within that program. Finally, each layer has its own parameters, which affect only that layer.

Until you get used to the menu-programming method, you'll spend quite a bit of time searching for that one particular parameter you're just itching to tweak. A solid background in synthesis programming will definitely help, but learning the particulars of one of these instruments (as with any other) will take some time and patience.

ObjectMover. Unfortunately missing from the 1000 Series is some type of system to store and distribute sound programs. Heck, at these prices, the 1000 Series probably should have been RAM-based and included a disk drive. Presently, the only option to store Series 1000 programs externally is ObjectMover, Kurzweil's editor/librarian software package for the Macintosh. "Editor" is probably not the best term for this program, because although you do get a likeness

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KMT48

of a 1000 Series front panel on the Mac screen, you're basically only using the Mac as a remote programmer. There are no graphic representations of envelopes or samples, but this is a $49.95 program. Version 1.0 comes with additional programs for the modules. There are 48 programs for the PX, 33 programs for the SX, and 17 programs for the HX. ObjectMover is basically a Mac librarian with pull-down menus, windows, help screens, and remote-programming capability.

The Manual. As of early Feb. '88, each 1000 Series unit comes with a generic manual for the entire series. Kurzweil also currently ships the K1000 with a supplemental appendix and a two-page information update in addition to the 1000 Series manual. We also received separate MIDI implementation charts for the K1000 and the modules, along with self-diagnostics instructions. Kurzweil informed us that the current manual is preliminary only, and they are in the process of rewriting the manual complete with an addendum for each specific unit. Hopefully, the new manual will include all specifications, which were not to be found in the preliminary manual. Presently, the "Dictionary of Parameters" takes up approximately 85% of the manual, but we would like to see more details—descriptions of what the noise waveforms are, how to route modulators, what wavetables and samples are available, and so on. The tutorial is too brief as well.

Conclusions. Kurzweil keeps manufacturing very good-sounding equipment, with some great features and others that we're more dubious about, for a price that will remove a bunch of George Washingtons from your bank account. In this case, we have a group of sample players/wavetable synthesizers which produce some lovely sounds and lots of them simultaneously. Kurzweil seems to be aiming for the professional-studio market, because the samples featured in these units have such a wide frequency range that equalization to roll off the high-frequency content will sometimes be necessary. The 1000 Series has no on-board filtering.

In our opinion, the K1000 probably isn't going to be able to compete with other synthesizers and sample players (or samplers, for that matter) in its price range, not with its keyboard. As for the expanders, they all feature some extraordinary sounds. The experienced producer or well-paid performer could definitely benefit by enhancing his or her current system with 20 to 24 voices of piano, orchestral, choral, string, or wind sounds, and each successive 1000 unit will proportionally increase a studio's capabilities. But it may be difficult for the average semi-professional or professional musician to justify such an expensive purchase when there are other units available that can do a similar job at a much lower price. On the other hand, some people would kill to get their hands on Kurzweil 250 sounds. From that standpoint, the price of a 1000 Series expander looks very enticing. So if you need the sounds and you've got the cash, go for it. ■

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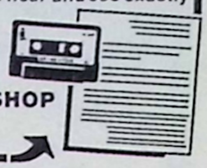

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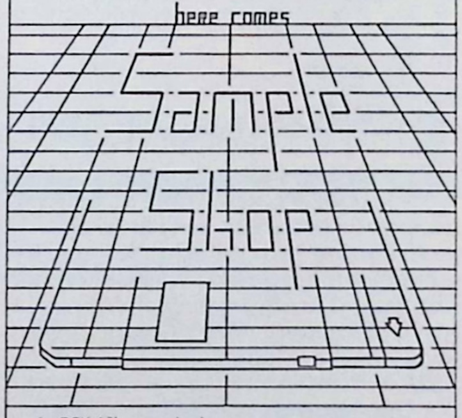

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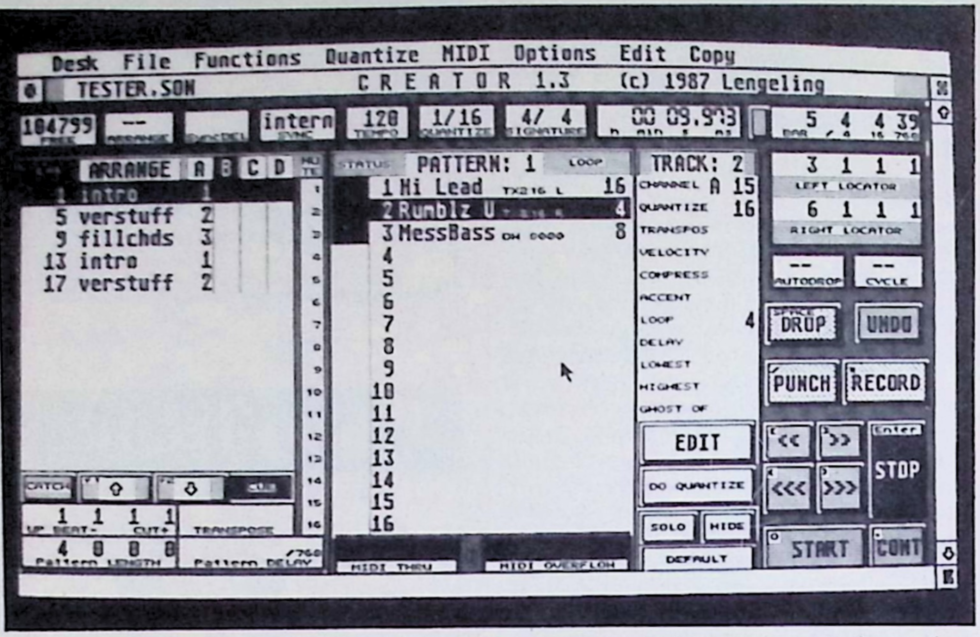


The main screen for the Creator sequencer. The arrangement list is shown at left, with the starting bar number, name, and number of each pattern. The window in the center shows track data for the currently selected pattern. When data has been recorded on a track, the block at the left side of the window turns black. Output parameter settings are shown in the column to the right of the track names. Currently, the loop length settings are being displayed for all tracks, while the box headed "TRACK: 2" shows all settings for track 2.

C-LAB CREATOR
SEQUENCER SOFTWARE FOR THE ATARI ST

By Jim Aikin

RUMORS HAD BEEN CIRCULATING for several months about the C-Lab sequencer, which was supposedly making quite a splash in Europe, where it originated. So as soon as the company lined up U.S. distribution (through Digidesign), we pounced on a review copy. Sequencers for the Atari ST are flying thick and fast these days, so we were naturally curious what would make this one stand out from the pack.

The rumors are true. Basically, Creator is just dripping with features. It offers (as an option) four MIDI output jacks, each with 16 channels for 64-channel operation. Its pattern/song playback architecture lets you play up to four independent lists of patterns at once—and if that doesn't provide enough structural complexity for you, you can set each of the tracks within each pattern to loop independently. The event editing utilities are among the best developed we've ever seen. The controller editing commands include both multiplication and translation. The program has a couple of exotic record modes and some unusual types of quantization. Operations are elegant, and visual feedback is maximal. We did have a few minor quibbles, but there's no question that Creator is a thoroughly professional sequencer. It has the kind of spectacular design that leaves your basic garden-variety sequencer looking a little green by comparison.

Overview. As we just mentioned, Creator is a pattern/song sequencer, with 99 patterns (each containing 16 tracks) that can be assembled into an "arrangement" list. The arrangement list is quite unusual in that it's four independent layers deep. This allows you to do things like recording a single long lead line in one pattern that flows across several other accompaniment patterns. Or you could load and store drum patterns to disk separately, and put them on a layer of their own. Naturally, Creator will let you record a long pattern while playing back several shorter ones in order from the arrangement list. In effect, then, you can record into any pattern while monitoring any combination of other patterns.

C-Lab Creator

Description: MIDI sequencer software.
Hardware requirements: Atari 520 ST, 1040 ST, or Mega. Monochrome (recommended) or color monitor. Optional output expander (with three additional MIDI out jacks) plugs into RS-232 port.
Memory: About 106,000 events (53,000 notes). 99 patterns, 16 tracks each.
Features: Pattern/song architecture with four simultaneous patterns playable at once. Track playback parameters including quantization, transposition, velocity compression, and looping. Multiple quantization modes. Event editing with direct MIDI input insertion. Controller editing and translation. 192 ppq clock resolution. Will load from disk during playback. Remote start/stop from MIDI keyboard. Compatible with GEM desktop accessories.
List price: $349.00. ExPort output expander, $175.00.
Contact: Digidesign, 1360 Willow Rd., Suite 101, Menlo Park, CA 94025. (415) 327-8811. In Europe: C-Lab Software, Postbox 70 03 03, 2000 Hamburg 70, West Germany.

Only one arrangement can be in memory at a time. This might seem to be a limitation for those who need to have a whole set on call at once, but there are two ways around the problem. Essentially, you can slice the arrangement into chunks, so that a single arrangement list could actually contain a number of independent pieces of music. You can insert pattern 0 at any point within the list to serve as a stop mark, and continue with a new song at the next entry in the list. You could also set up four independent pieces in the four layers, since each layer can be muted or unmuted independently. And that's only the beginning of the goodies in the arrangement section, which we'll delve into more fully below.

One extremely nice point about Creator is that both the arrangement list and the track sheet for the current pattern are displayed on the screen at the same time. When an arrangement is being played back, the track sheet window will switch (unless you tell it not to) to whatever pattern is currently playing, so you can keep an eye on what's going on. And the arrangement list will scroll, with the currently playing pattern highlighted in inverse video. Screen updating is also going on at lightning speed in two elapsed time indicators (bar/beat/subdivision/tick and hour/minute/second/millisecond) and in key velocity bar graphs for all 16 tracks. With all this going on and the machine simultaneously spitting out sixteenth-notes through several MIDI outputs, we started wondering whether somebody had snuck in and installed a super-fast processor in our ST. *Then* we learned that Creator will load from disk while playing back music! Astounding. But somehow, C-Lab keeps it all happening without a glitch.

Pull-down menus are used for many commands, but the commoner items have both on-screen mouse buttons and keyboard equivalents (which are shown right on the buttons in little tiny letters for added convenience). We were especially pleased to see a prominent 'undo' button which can save you from just about any disaster, including accidentally punching in on the wrong track. Changing numerical values is accomplished by clicking either the left or right mouse button. Holding the button scrolls the values rapidly. One of our few complaints about the program is that you can't use the number keys to type in new data for a parameter. Most items have small enough ranges that they'll scroll to wherever you want them within a second or two. For large, rapid changes, you can press the control key with your other hand, which turns the mouse into a slider control.

Recording & Track Operations. Creator records real straightforwardly: Click on the record button and the whole screen switches into inverse video to let you know you're happening. At the same time, your programmed metronome countoff starts. For the metronome, you can use the Atari's internal sound, or you can send any single note, at any velocity, on any MIDI channel you like. This allows you to listen to a drum machine woodblock or whatever, rather than the Atari speaker. Curiously, the MIDI metronome output setting is not stored as part of a song, so you have to manually enter the data at the start of every session. (Don't confuse this with programmable tempo; Creator does have the latter.)

The recording will be stored on whatever track you have selected within the current pattern. If you make a mistake and want to re-record, you don't even have to click on the stop button. Just click on record again, and the count-in will start over.

Creator is one of the few sequencers we've seen (maybe the only one, come to think of it) that records during the count-in but doesn't adjust those early notes so that they pile up on the downbeat of bar one. It is quite capable of recording "time before zero" material. This may seem odd at first: If you want that slightly early note to sound at all when playing back an individual pattern, you have to go to the event editor and change its start time yourself, or quantize to whatever resolution is needed to shift it onto the beat. There is an important advantage in this system, however: You can build an arrangement where some of the patterns have upbeats rather than starting on the beginnings of bars. Having done so, you can remove a pattern's upbeat or reinsert it into the arrangement by shifting a special parameter that determines where in the bar the arrangement will jump from the last pattern to the next one. Oh, hell, here we are talking about arrangement mode features, and they belong in a separate section of the review. That's the trouble with software. Everything interacts with everything else.

Auto-punch recording can be done between a standard pair of markers, or you can punch in and out manually. A cycle recording mode lets you layer additional material into your track without erasing the existing stuff. There's even a software safety key, which must be switched off before a destructive punch-in can take place. A cue button lets you use the mouse as a slider to scroll quickly to any point in a long pattern or arrangement.

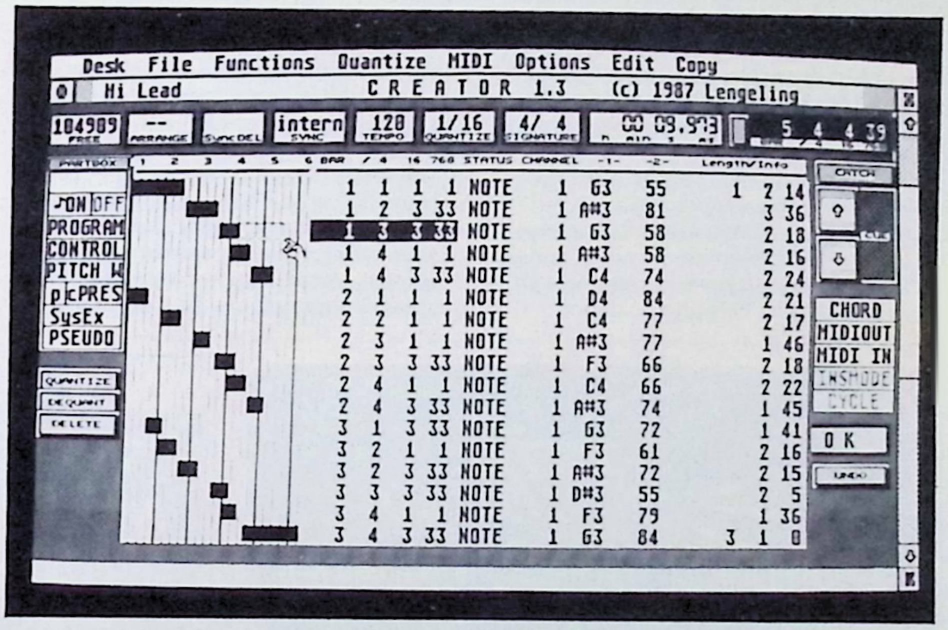
Many of the standard types of data processing can be handled in Creator either as edits (which alter the stored data) or as output parameters for the tracks (leaving the recorded data intact). Quantization, transposition, channelization, velocity transposition, velocity compression, upper and lower key limit, track delay, loop length, and "ghost of" are all output parameters programmable for each track within each pattern. (There is also a parameter on the screen called "accent," but it isn't explained in the manual and doesn't do anything.)

What is "ghost of"? Glad you asked. When a track is set up as a ghost of another track, it contains no musical data of its own, but rather "looks at" whatever is on the master track. This might be in any pattern, not just the current one. The ghost track can have its own channelization, transposition, velocity shift, and even time delay, which allows for all sorts of interesting MIDI layering. If the material on the master track is later edited, the ghost track will still be identical with the new track. This could be useful if you want to keep an ostinato part going through several patterns.

Obviously, the screen isn't big enough to display all the parameter data for 16 tracks at once. An unusual and highly functional "double window" system lets you see, at any given time, all of the output settings for the currently selected track as well as the settings of the currently selected parameter for all 16 tracks. (Please try not to get confused. We're doing our best here. Maybe you should look at the screen photo on page 142.) A track parameter window to the right of the pattern track sheet window has slots for all of the output controls listed a couple of paragraphs back. When you click on the slot for transposition, let's say, a column at the right side of the track sheet switches instantly to display the programmed transpositions for all the tracks. When, conversely, you click on a new track in the track sheet to make it the currently selected track, the values in the track parameter window all change instantly to tell you exactly what's going on in the output of that track. The values can be edited in either window, and what's more, they can be edited while the machine is playing back. You will occasionally get stuck notes if you scroll the transposition value during playback, but if you're silly enough to do something that weird during a gig, you deserve stuck notes.

The output parameter system is quite slick. There is a potential problem in the design, however—the only real gripe that we had with the program. The problem arises because all empty tracks, in all patterns, default not to a vanilla group of settings but to whatever settings you last programmed into any empty track. This is intended to be a feature, not a flaw: It lets you make convenient use of MIDI echo (out/thru) while switching from one track or pattern to another, which is very considerate. The only time it will trip you up is if you record a track, set up some parameters for it (let's say, a transposition of -24, eighth-note quantization, and a 16-beat loop for a nice four-bar bass riff), and then decide that you don't like your first take. So you go into record mode and re-record this same track. When you enter record mode, the music data on the track is erased. Thus the track is, temporarily, an empty track—so the program cheerfully copies your transposition, quantization, and loop length onto every other empty track in the sequencer!

The quickest way to return the unused tracks to vanilla status is to store a vanilla "channel default" for some channel you don't plan to use, and then simply set an empty track to this channel. Channel defaults are another cool feature, by the way: Each channel can have its own set of default settings stored in a separate buffer, and you can restore the current track to the settings for its current channel with a single click. To return to our complaint, getting rid of a superfluous quantization value on empty tracks is especially important, because if a track is quantized prior to recording, the setting will be used by the program as an input quantization, eliminating all those little nuances you



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FREE   ARRANGE    SYNC    TEMPO  QUANTIZE  SIGNATURE

BAR / 4  16 768 STATUS CHANNEL  -1-  -2-   Length/Info
 1   1   1   1  NOTE       1    G3   55    1  2 14
 1   2   3  33  NOTE       1   A#3   81       3 36
 1   3   3  33  NOTE       1    G3   58       2 18
 1   4   1   1  NOTE       1   A#3   58       2 16
 1   4   3  33  NOTE       1    C4   74       2 24
 2   1   1   1  NOTE       1    D4   84       2 21
 2   2   1   1  NOTE       1    C4   77       2 17
 2   3   1   1  NOTE       1   A#3   77       1 46
 2   3   3  33  NOTE       1    F3   66       2 18
 2   4   1   1  NOTE       1    C4   66       2 22
 2   4   3  33  NOTE       1   A#3   74       1 45
 3   1   3  33  NOTE       1    G3   72       1 41
 3   2   1   1  NOTE       1    F3   61       2 16
 3   2   3  33  NOTE       1   A#3   72       2 15
 3   3   3  33  NOTE       1   D#3   55       2  5
 3   4   1   1  NOTE       1    F3   79       1 36
 3   4   3  33  NOTE       1    G3   84    3  1  0
```

Event edit screen for Creator. Lengths of notes are displayed in the bar graph column at left. Individual event types are selected for display or insertion using the selection box at left. Cue buttons at upper right can be used to scroll through the list while listening to the notes, or a location can be selected using the scroll bar at the right edge.

thought you were recording. If you re-record parts as often as some of us, you'll find that this whole situation can get rather annoying.

Much more sensible (we've taken a deep breath and calmed down now, thank you) is the track/channel naming feature. Each track can be given its own eight-character name. In addition, each of the 64 output channels can be given a separate eight-character name, which will be displayed in smaller letters on the track sheet. This second name would normally be used simply for a tag to show what module is listening to that channel. It will be loaded automatically into the appropriate spot(s) on the track sheet of any pattern, whenever that output channel is selected. This makes it a bit easier to keep track of what is on what track—though frankly, that second set of letters is tiny enough to be hard to read at a glance.

Don't be misled by this discussion of channelization into thinking that Creator is a one-channel-per-track sequencer. The track channelization can be switched off, in which case each track can play back on any combination of 16 channels. Each track must be "channelized" to transmit only to a single output jack, however.

Editing. Creator has both a full array of regional editing commands and a powerful event edit screen. It also offers, throughout the program, a convenient way of dealing with the somewhat large numbers that can be generated by its 192 ppq resolution.

Here's how this works: At the top of the main screen you can set not only a time signature (numerator 1-99, denominator 4, 6, 8, 12, 16, 24, 32, 48, 64, or 96) but also a quantization value for the data displays. This quantization has nothing to do with how notes are played back, it's purely for convenience. Instead of displaying time values in bar/beat/tick form, as most programs do, Creator displays them in bar/beat/subdivision/tick form, where the subdivision corresponds to the display quantize value. If you set this value to sixteenth-notes, then the displays will roll over from 1/1/4/8 to 1/1/2/1, as the 49th tick corresponds to the next sixteenth-note. The result is that you never have to worry about how many ticks there are in your preferred metrical resolution, the way you do in most sequencers. The global time signature and quantization can be changed at any point during your work session, and all the displays and arrangement parameters will be adjusted accordingly. There is no provision in the program for creating a piece that shifts time signatures, unfortunately. (Grumble, grumble.)

Most of the edit operations that are accessed from the pull-down menus will affect the entire current track; if you want to do regional editing between the start and end locator points, you have to use a less complete set of commands that appear in a separate dialog box. Not to worry, however: It's extremely quick and easy to make a copy of your track (by clicking and dragging it to a new location in the pattern) and then use "cut inside locators" and "cut outside locators" menu commands to slice the region out of the original track while slicing everything except the region out of the copy. After editing the copy, you can merge the two tracks. Several different copy commands are included, making it easy to append material to itself several times, copy tracks to other patterns, and things of that sort.

When it comes to actually quantizing the stuff in memory, Creator offers a number of options. To begin with, you can quantize note length by itself, with or without setting limits for the minimum and maximum length that will be generated. You can also set all the notes in your track to a fixed length, for that great robotic feel, or add or subtract a fixed amount from all their lengths. You can quantize (if you should want to) the times of all events, including pitch-bends and controllers. You can quantize both note-ons and note-offs, which can affect note length. You can quantize only note-ons without moving note-offs, or quantize notes so that they retain their length while starting at quantized times.

There is also a feature called "capture quantize," which has two parameters—the number of clock ticks around the quantization grid within which the program will look for notes to quantize, and the percentage of change that will be made in the note's start time. For example, let's say you set the number of clock ticks to 96 and the percentage to 50%, and ask for quantization to the nearest quarter-note. In this case, the program looks for notes that start within 48 ticks before or 48 ticks after each quarter-note

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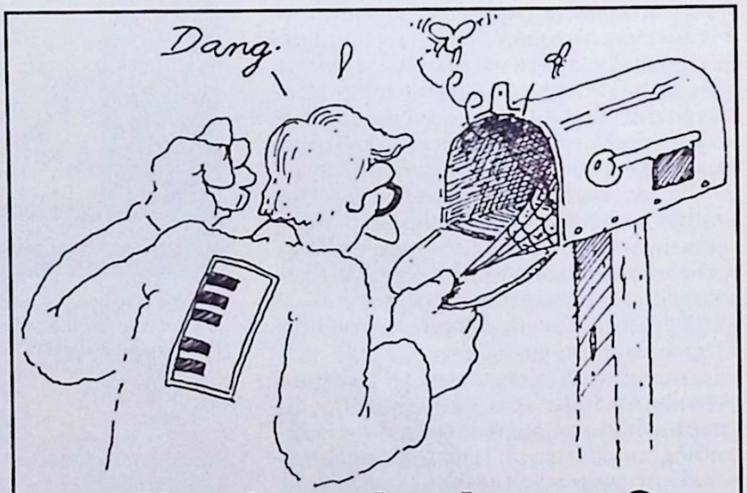

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beat, and then moves each note that it finds to a new position exactly halfway between its original position and the beat. We've seen this feature on a couple of other sequencers, but only with a fixed 50% adjustment, not with a percentage you can set yourself.

More complex operations can be performed using the "process data" and "transform events" windows. In the process data window, you can specify a region using a pair of bar/beat/subdivision/tick indicators, and then independently switch on or off a set of functions for changing MIDI channel, quantization, transposition, delay, velocity, velocity tapering, and velocity compression. Also in this box is a command for deleting notes above and/or below whatever pitch limits you may set.

In this window, velocity compression is performed only in ratios of two. You can select -1:4, -1:2, 1:2, 1:4, 1:8, or fixed velocity, just as with the track playback parameters. What? You say you want to multiply all of your velocities by .9, to smooth off the accents just a tiny bit? Okay, then you want to use the transform events window instead.

This window is a complete search-and-replace utility, again with regional start and end point definition. You get to define the event that will be searched for within the track (or region) and exactly what it will be turned into. Three "variables" are provided, as is a wild card that says "accept any value for this byte." The variables can be used to shuffle values from one place to another. For example, if you've recorded something with channel pressure (monophonic after-touch) and later want to translate this into note pressure (polyphonic after-touch), the data byte signifying the pressure will be in a different place in the new event. The variable lets you move it. The same solution is used when translating pressure into mod wheel or vice-versa.

'With all this going on, we started wondering whether somebody had snuck in and installed a super-fast processor in our ST. *Then* we learned that Creator will load from disk while playing back music!'

One of the variables can undergo either addition or multiplication during the transformation. This is intended mainly for compressing and expanding controller values. Multiplication values run from -12 to 99.9, with negative multiplication being used to invert values. (Addition must also be used here to keep the values in range.) A tapering function in this window lets you move smoothly from one value to another between the start and end points. This would be most useful for making velocity and modulation curves.

If you want to do crazy things, like turning note velocity into pitch-bend amount or inverting the pitches in a track, the transform events window will oblige. We do have one minor gripe: When you enter this window from the main sequencer screen, the last set of values you entered will still be in place, so you can perform the same operation on several tracks without having to re-enter the values; unfortunately, when you call up the same window from the event editor screen, you'll have to re-input the settings manually, as they will be wiped.

A separate box lets you delete or keep events that conform to the same kinds of criteria.

Event Editing. Creator's event editing

Continued

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environment is just about the slickest we've seen yet. Seventeen events, with all their associated data values, are displayed on the screen at any one time. The list scrolls during playback, and you can also scroll through it rapidly with the mouse. A pair of up/down mouse buttons can be used to scroll backward or forward through the list one event at a time, and notes will be heard (though at some fixed length) during this step-time playback, making it easy to locate to any spot. If you've got lots of chords in a track, you can click on a "chord" button, causing the scrolling to play your chords as simultaneous events rather than separate ones.

To edit an event, you click on the relevant data field and scroll the value up or down with the mouse buttons. If your time change moves the event to a different point in the list, the screen will update immediately to reflect the new order. Again, you'll hear the event when you click on it to select it, and if velocity is being edited, you'll hear the changes, as the machine will send out a rapid series of notes at the new velocities.

You can insert a new event of any type by dragging it onto the list from a resource box at the left side, or delete it by dragging it off to the side. The computer's insert and delete keys can also be used for this purpose. The resource box is also used to select which types of events will be displayed. This is a very convenient way to get pitch-bends out of the picture temporarily (they will still sound during playback, of course), or to look at the program changes by themselves. An undo button lets you get back to the original version of your track at any time, if you don't like the edits you've made.

Note-off events can be displayed separately, but the computer cleverly prevents you from editing their pitch, which would cause stuck notes, or their time, which must be edited in the note-on's duration field. You can edit their velocity, however, which is the purpose of the feature.

At the left side of the event list is a rudimentary bar graph representation of your data. This can be used to shorten or lengthen a note by clicking on the note's lower right corner and dragging, or to change its start time by dragging the whole thing left or right. A nifty little extra feature allows you to set a series of notes to the same duration by clicking on the lower right corner of the first one and then dragging down across the rest. This is good for editing chords and runs.

C-Lab has solved very neatly one of the chief problems of showing a bar graph side-by-side with an event list. The problem is, how do you deal with the fact that sometimes all the events visible in the list will occupy a quarter-note or less of time, while at other times they will stretch across ten or twelve bars? If you try to display all twelve bars, you'll run out of screen real estate, but if you confine yourself to a smaller region, some of the notes visible in the list may not appear in the graph at all. Creator's graph is a little more than five quarter-notes wide, but all the events in the list are always displayed. This is done by leaving the bar number undefined. In other words, any note that starts on beat 1 will appear at the left edge of the graphic area, no matter what bar it's in. The result is that a typical series of notes will run diagonally down the graph from left to right, just as you'd expect, but when it crosses the bar line the series will jump back to the left edge and start over. The extra beat (five quarter-notes of display rather than four) is to allow the durations of notes near the end of the bar to be displayed properly. Any note whose duration spills over into beat 6 appears to run off the edge of the graph.

If you don't find the graph useful, you can hide it simply by hitting the 'g' key on the computer. This speeds up the scrolling of the display somewhat.

Have we mentioned the MIDI insert features yet? While in the event editor, you can replace the pitch and velocity values of a note event by playing a MIDI keyboard. There is no way of replacing pitch without replacing velocity or vice-versa. Score one point for the Steinberg Pro-24. Come to think of it, the Pro-24 also steps to the next note when you use this type of input, allowing you to do a whole series of notes without touching the mouse. Creator isn't quite that slick. In most other respects, though, its list editing and graphic display are a distinct improvement over the Steinberg, in our opinion.

Program change data and controller data can be input through MIDI in the same manner. Another mode lets you insert new notes (which will have the same start time and duration as the current event) from a MIDI keyboard. You can't insert new non-note events in this mode, however.

Creator has a whole class of pseudo-events. Many of these are currently undefined (a portent of things to come?). The current batch includes the loop point marker, mute and unmute commands for any track in the pattern, absolute and relative tempo changes, and MIDI song select. You can also send any MIDI byte you like (tune request, anyone?), or turn the MIDI clock output on and off automatically. Mutes and unmutes can be recorded in real time.

By editing the loop pointer's time value in the event edit screen, you can easily set up a loop whose length is a fraction of a beat. The mute and unmute markers are quite useful in conjunction with looping tracks. For example, let's say your pattern is 16 bars long, and has on one track a two-bar drum pattern that loops. By muting the drum track in bars 7-8 and 15-16, you could open up holes in which to record drum fills without having to worry about copying out the drum pattern the requisite number of times. This way, if you later want to change the drum beat, you can go back to its original two-bar-long track and edit it once, rather than having to edit bars 1-2, 3-4, 5-6, etc. individually.

We'd like to see a "number of times to play the loop" parameter added. Nested loops would be a cool addition, too. As it stands, all loops in Creator go on forever, except when the program is playing an arrangement. In this case, everything in a pattern, including the loops, stops playing when a new pattern begins in that layer of the arrangement. (Here we are talking about arrangement mode again. Arrgh!)

Relative tempo events will add or subtract

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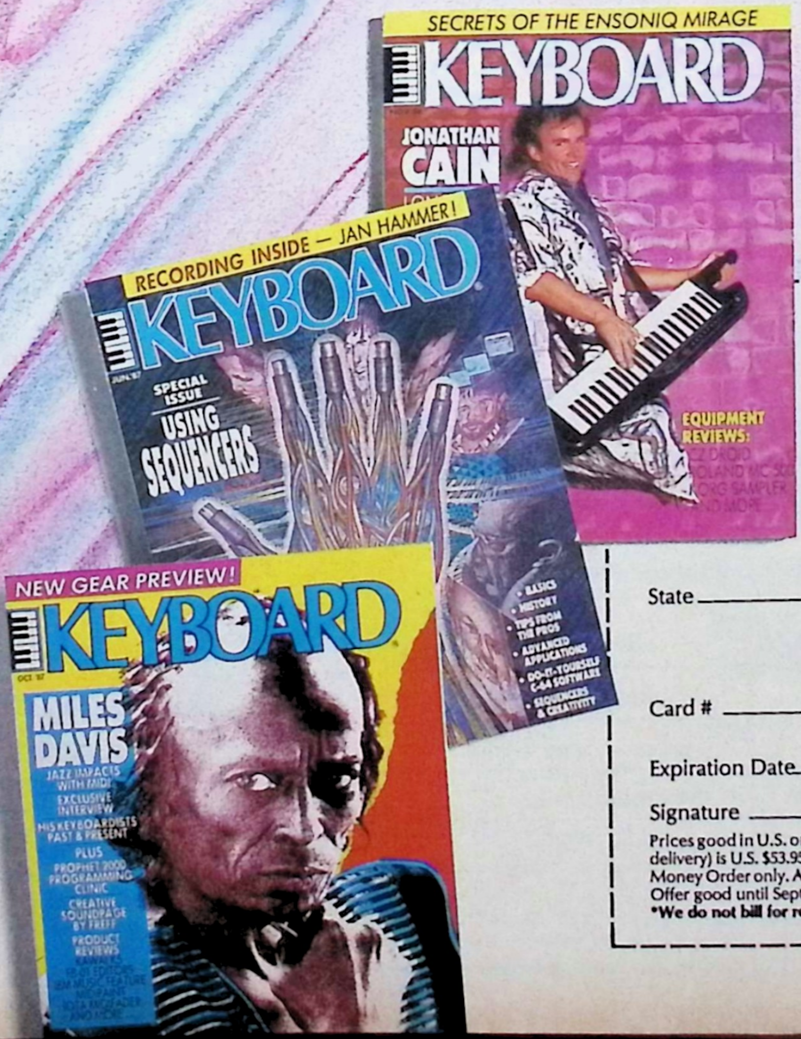
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some specified value from the metronome setting. Absolute tempo events will set the metronome to the specified value. Tempo events can be stored in any track, but you might want to devote one pattern specifically to them and run it by itself in layer D of the arrangement, creating, in effect, a conductor track. Creator will record absolute tempo events in real time, by the way. By clicking the mouse on the metronome display, you can scroll the values up or down, and tempo events will be recorded.

Building Arrangements. If you've been following along, you will already have picked up various tidbits about Creator's arrangement (song) functions, which are quite powerful. Basically, the 99 patterns can be assembled in any order in an arrangement list. This list is four layers deep, so up to four patterns can be playing back at a time. Each pattern can be given its own start time, and will play until a new pattern starts in the same layer, at which time it will shut off.

The manual doesn't say what the maximum size of the arrangement list is. We got bored after inserting 200 patterns, and stopped. It does say that the largest bar number the list will deal with is about 1,330 in 4/4 time. Pattern 0 serves as a stop marker, and can be used to split the list into several separate songs. Each pattern in the list can be given its own eight-character name. If the same pattern is used several times, it can be given a new name every time if you like. Curiously, there is no way to give names to the 99 individual numbered patterns.

Each pattern in the list can be given its own combination of track mutes. These are displayed in a narrow column next to the track sheet, so it's very easy to tell what you've muted. During playback the arrangement list scrolls, and the track sheet is updated to show the currently playing pattern. Even the mute display is updated.

Patterns can be added to the list by clicking and dragging or by hitting the insert key. They can be deleted by dragging them off the list or by hitting the delete key. It's all very intuitive—no messy commands to learn. If you change the starting time of a pattern so drastically that its position in the list is affected, the program reorders the list automatically.

Each pattern in the list has several parameters associated with it, in addition to mutes: number (1-99) and name, obviously, plus length, delay, transpose, and upbeat/cut. The length parameter lets you shut off a pattern after playing a portion of it, even if the next pattern on that layer of the arrangement isn't scheduled to start yet. By increasing the length setting of a pattern, you can push all of the subsequent patterns in the arrangement to later start times.

Delay and transpose operate about the way you'd expect. Upbeat/cut is unusual, however. As we mentioned earlier, this parameter lets you set the time when the program will shut off the previous pattern and start the new one, without affecting

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where the new one falls in relation to the beat. So if notes at a time before zero have been programmed into a pattern, they can be heard as upbeats in the arrangement when this parameter is used. The parameter can also be used to make the transition between patterns sound smoother. Normally, if notes are still sounding when the end of the previous pattern is reached, the note-offs will be generated by the program precisely at the point where it switches to the new pattern. But if this is the downbeat of a bar, the MIDI data stream can get a bit packed. By setting the cut point slightly ahead of the bar, you can get the note-offs out of the way in a more expeditious manner.

Disk Functions. As we mentioned earlier, Creator will let you load, save, or even format a blank disk while it's playing. We wouldn't recommend saving while playing, as it's always remotely possible that an error could be introduced into your file. Loading while playing is much more useful, because it lets you do nearly seamless live performance playback of a whole set.

You can load and save single patterns, songs (everything in memory is considered a single song), or "sequences," which turn out to be single tracks. These are given automatic filename extensions of PAT, SON, or SEQ by the machine. When you save a new version with the same filename, the last version you saved is renamed with a BAT, BON, or BEQ extension, so you'll always have two versions on disk in case either you or the computer does something horrible.

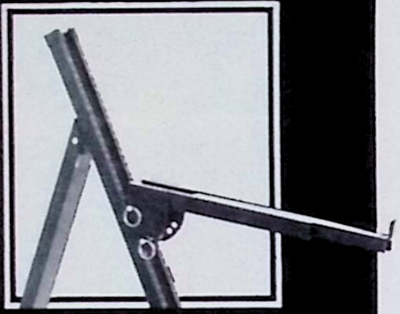
Other Stuff. There are too many features in Creator for us to list them all. We thought you might like to hear about a few, though. If you increment the real-time clock display by a single second or minute, the bar/beat display will be updated to show the equivalent spot in the music, depending on the current metronome setting. This could be real handy if you need exact timing hits. Any combination of the 16 MIDI channels can be transpose-disabled, a feature that owners of multiple drum machines will be happy to see.

Start, record, stop, pause/continue, and several other things can be controlled remotely from one octave of a MIDI keyboard. (You get to pick the octave.) A portamento footswitch (controller 65) can be used for punch-in and -out. You can double or halve the speed of all the events on a track with a single edit command. You can use a "humanize" feature to randomize, slightly or drastically, the timing of events. Creator will both record and display sys-ex data dumps, and will let you assemble your own handshaking messages if these are needed.

A "MIDI data overflow" meter on the screen will show immediately if you're sending so much data so close together that some of it must be delayed in reference to its nominal time. Function keys F3 through F10 can be used for storing locator start and end times. Combinations of mutes can also be stored.

All of which is thoroughly impressive. Less impressive: Text events can be inserted in the event list, which sounds hip until you

We've covered all the Angles.



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discover that your text will be displayed in a column that's a generous six characters wide. A freshman programmer in a good junior college could probably come up with a better way to display text in a track, so we're reasonably sure C-Lab will have something more appropriate up and running with the next revision. There's also a manual tap tempo key, but we couldn't get it to work worth a damn, so we aren't even going to mention it.

Creator uses a hardware key (which the Brits call a "dongle"). This plugs into the Atari's game port. You can make copies of the program disk, but the program won't run unless it sees its precious dongle in the port. This is probably the best system yet devised to combat software thieves, but it certainly isn't convenient if you happen to own and use several dongle-dependent programs. In order to switch from one to another, you can't just change disks. You have to switch the computer off, because it's not a good idea to plug or unplug the key while the electronics are active. We'd like to see somebody market a dongle-stacker, a little box that would let you plug several keys into one side and route the Atari's connectors to whichever one you prefer with a multi-position switch.

Conclusions. This sequencer is going to have the competition scrambling to keep up. If they make the mistake of assuming (as we've heard some manufacturers' representatives defensively claim) that the competition's design isn't better, just different, Creator is going to eat them alive. Of course, it is in the top price bracket for Atari software, so if you don't need all these features, a less expensive sequencer could still be the right choice for you.

The program is laid out logically, making it quite easy to learn, and the manual is far above average, especially considering it was written by a native speaker of German. The track output parameters allow you to do lots of operations, even up to the level of recording whole pieces, without getting into editing if you don't want to. On the other hand, the edit functions are quite comprehensive. In terms of both speed of operation and sheer number of features, Creator is an amazing accomplishment. It's not without its little quirks, of course: The empty track default business is annoying, and if you're going to store text in a track, you certainly want to be able to read columns wider than six characters. But in a program this complex, there are bound to be places where the programmer doesn't have time to sand off the rough corners. We were delighted to find how few problems were visible, and how minor these were.

Head-to-head product comparisons are odious, because they're always incomplete, but we know readers like them, so we'll indulge in a bit of A/Bing of Atari sequencers, for the benefit of those whose local stores don't stock them all. We haven't yet had a chance to delve into the latest updates for the Steinberg Pro-24 and the Hybrid Arts SMPTE-Track, but we have seen Dr. T's KCS Level 2. The Steinberg has a notation system up and running, which Creator won't have

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C-LAB CREATOR

for a few more months, but its graphic display is pretty clumsy compared to Creator's. Hybrid Arts is the only one of the bunch with direct SMPTE synchronization, and they're working on a graphic event editor, but the last time we looked, SMPTE-Track was still a bit skimpy on editing commands. It does have more auto-locate and auto-punch memories than Creator, but its method of assembling a song out of segments is not so intuitively obvious.

The only Atari sequencer that can really slug it out toe-to-toe with Creator, in our opinion, is KCS Level 2. This contains a cornucopia of algorithmic randomizing and editing features not found in Creator. Building a long song out of short segments gives you more options in KCS, but the process is significantly easier to work with in Creator. Creator also has a definite edge in terms of controller editing, and its event editor has more convenience features. Having multiple MIDI outputs has to be counted as a plus, too.

If you're shopping for a professional-level Atari sequencer, or if you're waffling between the Atari and the Mac for sequencing because you like the Atari's price but you like the Mac's reputation and its tough, no-nonsense graphics, you owe it to yourself to check out Creator on a black-and-white monitor. It looks like a Mac program, and it acts the way Mac programs ought to act. They don't always act that way, do they? Creator does. ■

SYNTH & MIDI BASICS

Continued from page 117

repeatedly change the length of the string very slightly. Typically, this rocking motion will be applied five or six times a second. In order to generate a faster vibrato, the player will rock the fingertip faster, and in order to create a broader effect (that is, in order to increase the depth of the vibrato), the player will move the fingertip over a larger range, thus shortening and lengthening the string length to a greater degree.

This is analagous to a vibrato effect generated in a subtractive synth, where the speed of the fingertip movement is simulated by LFO speed, and the deviation by which the rocking motion shortens and lengthens the string is simulated by the amount of LFO signal sent to the oscillator. But analog components are notoriously unstable, so there's really no way of performing serious research with this kind of model. Instead, Dr. Chowning's team decided to create a computer model of a sound and to induce various kinds of vibratos—perfectly controlled and exact vibratos of greater speed and depth than could ever be carried out by a live musician—by digital means. The task at hand was then to study and analyze the aural results of these "perfect" frequency modulations.

The results of this research were surprising indeed. Tune in next month when we talk about what they were and how this research project ultimately brought very large smiles to the faces of Yamaha stockholders everywhere. Until then, sayonara. ■

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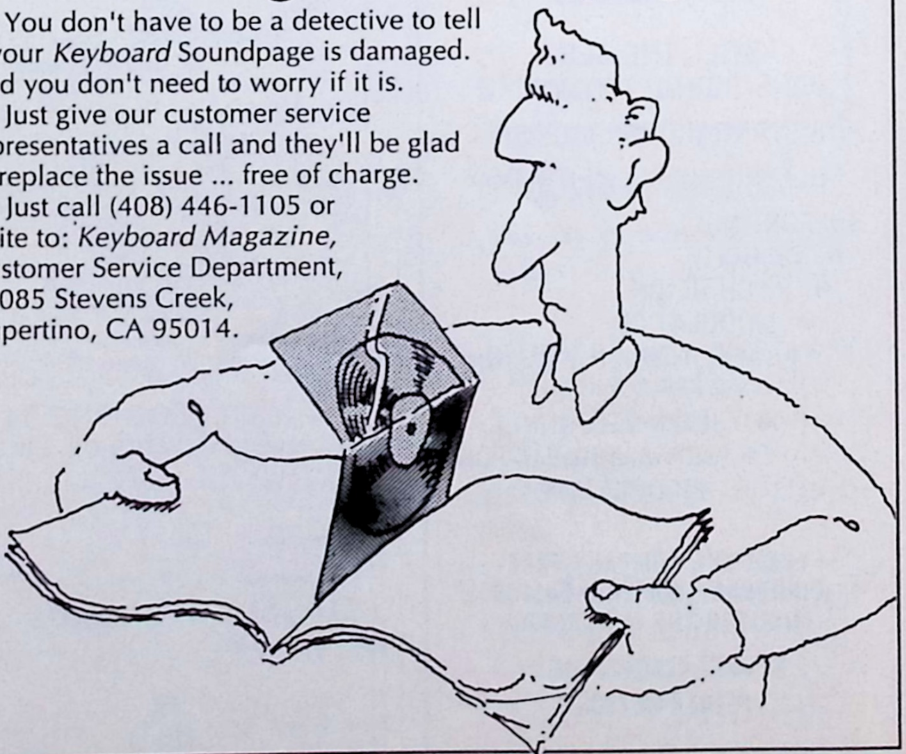

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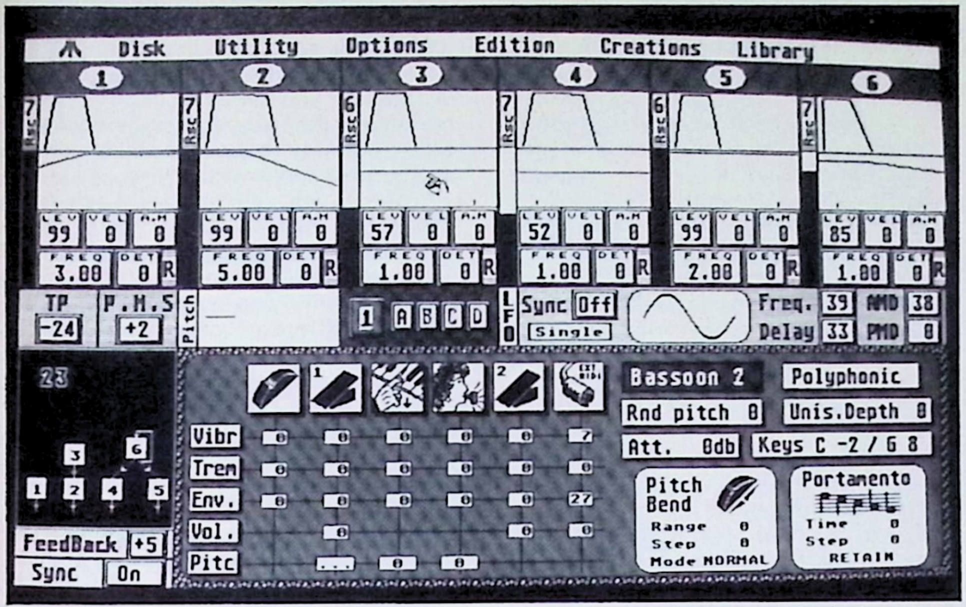

The edit screen for Synth Works DX/TX. Small versions of envelope and keyboard scaling graphs for the six operators are shown in the top half of the screen, below the tabs for the pull-down menus. The grid in the lower half of the screen is used for programming function parameters. When you click on one of the little envelope or scaling windows, a large version pops up over the function parameter grid.

STEINBERG SYNTH WORKS DX/TX 2.0 EDITOR/LIBRARIAN

By Jim Aikin

DESIGNING AN EDITOR/LIBRARIAN program that will be compatible with Yamaha's ever-growing line of DX/TX instruments is bound to present some challenges. Even if you restrict yourself, as Steinberg has in their Synth Works DX/TX package, to six-operator instruments, which all have basically the same patch parameters, you've still got a bewildering array of function and performance data to deal with, to say nothing of communications protocols. Nevertheless, programmers rush in.

Synth Works DX/TX runs on Atari 1040 ST computers, as well as on 520 STs with a memory upgrade. The program needs the full Meg of memory because it loads an enormous library of sounds at once for fast access. If you're into shuffling dozens upon dozens of patches around, this program will definitely make your life easier. In addition to having a nice, if fairly standard, patch editor screen, it has a built-in 10,000-note mini-sequencer, which is helpful for setting up a test loop that will play while you edit. Keyboard equivalents let you bypass the pull-down menus for faster operation. A two-channel transmission setup allows you to talk to two modules of a TX816 at once. In addition, performance and microtuning utilities make the program compatible (sort of) with the DX7II and TX802.

Not to scare you off, maybe we should explain that "sort of." You can edit both performance data and the microtuning table on the Synth Works screen. What you can't do (until the next update, we presume) is load and store whole banks of performances at once. Not directly, anyhow. Each performance has to be transmitted to the instrument and then saved to its internal memory manually, from the front panel. In order to save a set of performances (or, for that matter, a single performance, even one you've just been editing on the screen) on computer disk, you'll need to use Synth Works' sys-ex dump utility. Just click on "receive any dump" from a pull-down menu and then command the DX or TX (again manually, from its front panel) to transmit the performance or tuning data. Any other type of sys-ex dump can also be stored and retransmitted in this fashion. The software doesn't care what type of instrument it's coming from, as long as no hand-shaking is needed. Files of up to 31K can be handled. It's nice to see such an open-ended utility implemented on an editor/librarian, but we can't help feeling that it's a little klugy to make you use it when you're working with the instrument that the software is designed for.

Synth Works DX

Description: DX/TX editor/librarian software.

Hardware requirements: Atari 1040 ST computer (or 520 ST with memory upgrade).

Compatibility: DX7, TX7, TF1. Contains utilities for editing DX7II and TX802 performance, tuning, and fractional scaling data.

Features: Multiple edit buffers with two-channel simultaneous editing. Graphic envelope editing. Built-in sequencer and pop-up screen keyboard. Resident patch library with 21 categories of 128 patches each. 3D harmonic analysis display with rotating views. 2D waveform display. Random patch generator.

List price: $259.00 (includes over 1,500 patches).

Contact: Russ Jones Marketing, 17700 Raymer St., Suite 1001, Northridge, CA 91325. (818) 993-4091.

Synth Works is shipped with a library of around 1,500 patches. We listened to only a few of these, but we found the usual mix—some great sounds and a certain amount of filler.

Editor. Many editor programs let you keep only a single patch at a time in the internal editing buffer; Synth Works holds eight. Four are handled on each of two MIDI channels, allowing you to voice two modules at a time for layering purposes. (The two modules have to be set to adjacent MIDI channels.) These buffers are in addition to the bank and library buffers, discussed below. You can copy the contents of any buffer to any other buffer in its own group of four, but not to any of the buffers in the other group.

All numerical data can be edited by clicking on the left and right mouse buttons while the on-screen cursor is pointing to the value you want to edit. The left button decrements and the right button increments. Clicking and holding scrolls rapidly through the allowable values. An alternative method (which you can save to disk as part of a setu file if you like) lets you click and hold on number and then drag the mouse to the le or right to alter the value.

This data entry system is very easy to lear and deal with. We did encounter situation however, where the program appeared not to "see" the buttons. Eventually we figured out that the "hot spot" for mouse data entry is only in the top half of some of the data fields, not in the bottom half. (There were also times when the pull-down menus on the library screen were sluggish about appearing when we parked the cursor over their tabs. This happened more often with the color version of the program than with the black-and-white version.)

The editing screen is clearly laid out, with six boxes for the six operators filling the upper half of the screen. Each box has a tiny graph for the envelope and another for the scaling curve. When you click on any of these small representations, a large window opens in which you can edit the envelope or curve graphically. At the same time, the small window in the individual operator display is replaced by the numerical data, which can be edited like any other numerical data. It's odd that you can't simply choose to display nothing but the envelope numbers and edit them all in a bunch by jumping back and forth. As it is, you can only edit the envelope or scaling values for one operator at a time, and while you're doing this you can't edit any *other* numerical data. If you click on any of the other parameters to edit them, the big envelope window will close, and the envelope data values will disappear from the screen. This system seemed needlessly convoluted to us, but it's a minor point, since the graphs appear and disappear almost instantaneously.

Envelopes can be copied from one operator to another by clicking and dragging, as can all the data for an operator. With all those internal edit buffers to work with, it's too bad there's no way of copying an operator or envelope from one buffer to another.

If you're editing DX7II or TX802 patches, when you click on the scaling graph for an operator, you can click on a special switch to get the fractional scaling display. This display allows you to set up a fractional scaling curve simply by dragging the mouse across the screen—again, a slick bit of design.

Synth Works has a patch generator, which seems to be optimized to produce pretty workable sounds. It will either make minor variations on existing sounds or produce entirely new ones from scratch. None of the creations have pitch envelopes or function data; if you want those, you have to generate them yourself.

Library. This program is among the best we've seen at handling large amounts of material easily. It loads from disk an entire rary containing 21 named "categories" of to 100 patches each. These can be shuffled and out of two 32-patch banks, and the nks can be sent to and received from the synthesizer. Banks can also be saved to disk without reference to the library, if desired. The library shipped from the factory has category names that most players will probably find useful—bass, brass, organs, percussion, and so on. If the names don't suit, you can customize the menu with your own.

Moving patches around in the librarian is an effortless process: Simply click and drag to copy from one slot to another. When you click on a slot, the data for that patch is sent instantly to the DX edit buffer, so you can hear it. This function worked fine with a TX802, but for some reason, our TX7 had to be set to individual mode for it to work. When the TX7 was in combination mode, it insisted on switching back to its own internal patch 1 immediately after the data from Synth Works finished arriving at the edit buffer. The unit doesn't do this with another librarian program, so we assume that Synth Works was sending out something that the TX didn't know how to deal with, and so interpreted as a patch change or a reset command.

In the librarian screen, you can drag a patch to the trash or to one of the edit buffers, or copy a block of patches from a category to a bank. An "update library" command writes to disk only the changes you've made in the library, which certainly saves time with a library this size. There's a utility command that will automatically alphabetize the patches in any library category, and another that will clear out patches that are exact duplicates of one another, even if they have different names.

Sequencer & On-Screen Keyboard. For testing patches during an edit session, Synth Works offers both a screen keyboard (which appears and disappears when you hit a 'K' on the computer) and a simple sequencer (which starts and stops its playback loop when you hit a 'P').

The sequencer has no metronome or tracks or anything, it just sits there and records whatever comes in until you tell it to stop. If you happen to play something you like, though, you can save it to disk in a form readable by the Steinberg Pro-24 sequencer. Music stored as a pattern file by Pro-24 can also be loaded into Synth Works.

After-touch, velocity, and pitch-bend data are all generated by the computer when you use the screen keyboard, which is helpful for testing performance settings. If you don't move the mouse while clicking on a key, values of zero are sent out (and 64 for the pitch-bender, obviously). We found that this portion of the program contained a bug, however. Neither our TX7 nor our TX802 would play properly in response to the output from the on-screen keyboard. This was about the weirdest MIDI data problem we've ever encountered: Another (non-Yamaha) synthesizer on the same channel was receiving notes from the screen keyboard just fine, and its hardware keyboard could play the TX just fine, but the TX kept insisting that the Atari's note-ons were in the bottom octave and didn't have any note-offs. Our data analyzer revealed that Synth Works was starting the note event with a note-on status byte followed immediately by a system reset (FF hex), which apparently caused the Yamaha gear to freak out.

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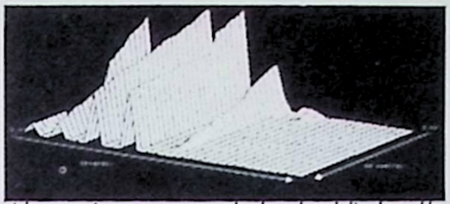
Microtune Editor. The Synth Works microtuning table editor gives you a screen display of one octave of key data at a time, and lets you scroll the coarse and fine settings up and down. It also gives a readout for each key of the total value of the pitch in cents, and the cents of deviation from the bottom C in the octave. Octaves can be copied from one to another, but only C-to-C octaves are allowed.

So far, so good. Several utility commands are included on this screen, but they seem to be more a vague stab at providing a tuning environment than a real well thought-out system. You can load the current tuning table from the synth, for example, but you can't call one up from its memory; you have to do that manually, or from another screen in the program. An 'input ratio' command will cause the computer to calculate an entire equal-tempered keyboard table for you, but ratios must be whole numbers, and the number entered will be used as the number of keys per whole-step. So if you enter a 5, what you get is a 30-steps-per-octave scale, which is not terribly useful compared to the 31-step equal-tempered scale. There is no way to get to 31, other than by calculating your own values and entering them manually.

We could beat this section of the program up some more, but we've made our point. Programmers probably won't start writing good tuning editors until after musicians figure out what they want to do with the tuning tables, so maybe it's no big deal.

Waveform Display & Harmonic Analysis. If you go in for educational extras, you might enjoy having an editor that displays a three-dimensional time/amplitude/frequency graph of the sound, or a two-dimensional plot of one cycle of the fundamental. The 3D harmonic spectrum display has no user-adjustable settings, but it's optimized pretty well. The X axis divides the frequency spectrum into about 20 slices, each 65Hz wide, while the Y axis divides time into 24 slices of 80ms. That's a total of 2,100Hz and about two seconds. The Z axis is not scaled. By turning off various operators, you can inspect their contributions to the sound, which could be very helpful if you're just starting to learn FM synthesis. If the default display angle obscures some of the peaks and valleys that you're interested in, you can hit one of the Atari's function keys and get a different angle view. Eight views are provided. The harmonic analysis graph takes 65 seconds or so to be generated; new views of an already calculated graph are generated in about 15 seconds. The waveform display is generated much faster, and again might be of some educational value: By switching off all but a couple of operators, you can see how a modulator affects a sine wave carrier. But as this graph is not equipped with any X or Y units, it isn't a terribly rigorous tool for sound analysis.



A harmonic spectrum as calculated and displayed by Synth Works.

Conclusions. To paraphrase a famous cartoon by James Thurber, Synth Works DX is a naive little imported editor/librarian without any breeding, but we think you'll be amused by its presumption. Actually, that's a slightly misleading paraphrase: The program isn't truly naive. It boasts some powerful features, including multiple edit buffers and the ability to handle a really large library of patches. The graphic envelope editing is reasonably slick, and the harmonic analysis display is quite sexy. Being able to edit and hear two TX modules at once is bound to come in handy now and again. Having a built-in sequencer that plays while you're editing is a wonderful extra. And Synth Works certainly deserves credit for getting any sort of DX7II/TX802 compatibility onto the market with reasonable speed.

On the other hand, that compatibility is only partial, not complete. In our test, the pop-up keyboard that's supposed to be used for playing the module during an edit session simply didn't work. And it's too bad you can't edit, or even display, the numerical values for several envelopes (or scaling curves) at once. Don't get us wrong—Synth Works DX is far superior to many of the DX/TX editor/librarians currently on the market. But it's the kind of program that teases you. It gets your hopes up and then doesn't quite come through as spectacularly as you wish it did. Maybe afte the next update. . . . ■

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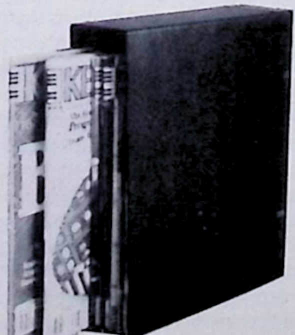

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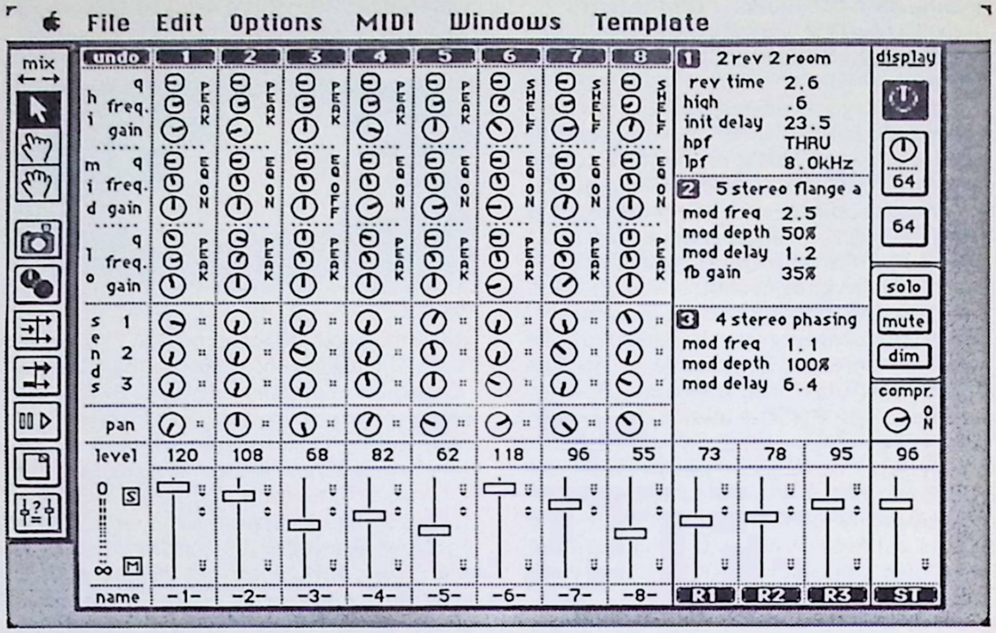
KEYBOARD REPORT

DMP7 PRO
EDITOR/LIBRARIAN MAC SOFTWARE

By Dominic Milano



level: 120 108 68 82 62 118 96 55 73 78 95 96

name: -1- -2- -3- -4- -5- -6- -7- -8- R1 R2 R3 ST

1 2 rev 2 room
rev time 2.6
high .6
init delay 23.5
hpf THRU
lpf 8.0kHz

2 5 stereo flange a
mod freq 2.5
mod depth 50%
mod delay 1.2
fb gain 35%

3 4 stereo phasing
mod freq 1.1
mod depth 100%
mod delay 6.4

All of the DMP7's controls are displayed on the interactive mix editor window.

EVER TRY DOING A MIX ON A YAMAHA DMP7? Even in a live situation, changing one of its 206 parameters can take a whole lot more keystrokes than you probably have time for. Why? The DMP7, for those of you who aren't familiar with it, is one of those products that lost most of its knobs and faders to the cost-effectiveness beast (see Keyboard Report, Aug. '87, for more details). However, what you lose in ease of real-time control can be regained by automating your mix by connecting a DMP7 (whose every function can be controlled over MIDI) to a MIDI sequencer.

DMP7 PRO, a visual editing and librarian package that runs on the Macintosh, is designed to make the automation process even easier. Unlike Digidesign's Q-Sheet (Keyboard Report, Nov. '87), DMP7 PRO doesn't automate the DMP7 on its own. Instead, it is intended to enhance the automation process when you use PRO in conjunction with an external MIDI sequencer. PRO also has quite a few features that increase the capabilities of the DMP7, including the ability to configure the console's solo busses, group any combination of controls, and take snapshots of up to eight scenes (a collection of settings for up to 36 controls) and recall them with a single mouse click.

Operation. DMP7 PRO (Program Recall and Organize) requires a Mac Plus, SE, or Mac II, along with a Mac-to-MIDI interface, to operate. The program disk is copy-protected, but can be installed and deinstalled on a hard drive with no muss and no fuss. The manual is full of useful diagrams for running DMP7 PRO in conjunction with a DMP7 and a hardware sequencer. But be warned, in some cases, you'll need a merger box of some sort. For our tests, we used a second Mac running sequencer software and got great results, although we ran into trouble—actually we ran out of gear—when we tried to remotely control our software sequencer from DMP7 PRO's transport window (more on this below).

If you've ever spent an entire afternoon reassigning the controller numbers in a DMP7, you'll love the Send Control Table command in DMP7 PRO, because it resets the DMP's controller and note tables in an instant. This is helpful, because if the internal tables are set to values other than the factory defaults, the edits you make with PRO won't correspond to what happens in the DMP7.

The program uses one main interactive graphic display of the DMP7's front panel, laid out the way a conventional mixer would be, complete with pan dials, effect sends, effect returns, EQ pots, and so on. You can select between three ways to display the mixer settings: graphic (displays settings as knobs and fader positions), numeric (shows settings as numbers), and mix (unselected controls are shown as knobs and faders, while selected controls show their settings numerically). To change a setting, you point to the appropriate knob or fader with the mouse and click. While still holding the click, you drag the mouse up or down, left or right, and the selected pot will turn (or the numeric values will change). Likewise, clicking on mute and solo switches toggles them (there's also a special momentary mute switch that overrides the conventional mute and solo switches—very cool). As long as you've got the DMP7 set to the right MIDI channel and your cables routed properly, all changes made on-screen will effect a corresponding change in the DMP7. Pretty straight-ahead stuff.

Cut, copy, and paste editing is supported, allowing you to do things like copy settings from one mixer channel to another, lift a whole bunch of channel settings from one scene and paste them into another, copy effects settings, and so on. An undo button resets the selected controls to the position they were at before being edited. By the way, there are equivalent keyboard commands for all these operations. Double-clicking on various controls accesses various graphic editing windows for things like EQ, panning, and the compressor.

Calling up the automation tool windows is a simple matter of double-clicking on the right icon in the tool box at the left of the screen. These tools include snapshot memories, grouping memories, filtering memories, update memories, tape transport controls, a note pad, and a compare function.

The snapshot function stores settings of up to 36 controls in each of its eight memory slots (these can be named). A single click will recall any one of the snapshots instantly (note that the changes occur instantly in the DMP7, but the Mac screen takes a second to redraw itself). This is a very useful thing if, for example, you're switching an effects processor between being a reverb and a stereo delay line during a mix.

Eight group masters can be set in the group window. As with the snapshot feature, up to 36 controls (although we can't imagine ever needing to assign more than eight at once) can be assigned to each of eight master dials in the group window. For example, you could assign all the drum faders to one group master, the mid EQ gains controls to another,

DMP7 PRO

Description: Editor/librarian automation enhancement software for the Yamaha DMP7 mixer.

Requirements: Macintosh with at least 1 Meg of RAM (Plus, SE, II) and compatible interface.

Features: Interactive graphic display of all DMP7 controls, snapshot memories, update memories, filter memories, transport controls, autolocation memories, grouping functions, configurable solo busses.

Disk: 3.5" single-sided floppy, copy-protected, hard-disk installable.

List Price: $395.00.

Contact: Digital Music Services, 23010 Lake Forest Dr., Suite D334, Laguna Hills, CA 92653. (714) 951-1159.

and so on. Each group can be set to respond to changes linearly or in "ratiomatic" fashion (faders and dials retain their settings relative to each other). If you're bent on grouping more than 36 controls, you can select as many controls as you like as long as you aren't assigning them to one of the memory functions. Just for yucks, we grouped all 118 dials and faders, and found that we were able to change every one of their settings as a group.

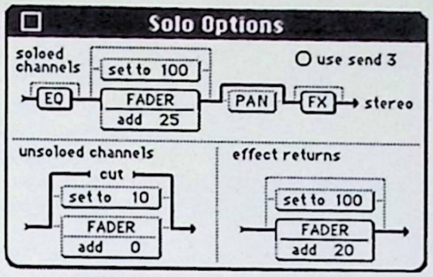
Another set of memories is supplied in the filter window. Care to guess how many memories there are? Eight. Again, the maximum number of controls selectable for an individual filter memory is 36. The filter memories are used to remove controls from an automated mix (there's also a filter mode in which clicking on any fader or dial in the mix editor screen will remove that control). Note, however, that this only works if you are routing your sequencer back through DMP7 PRO during playback.

If you're in the middle of a mix, and decide that the vocals of one section need to be just a tad louder, you can use the update window to add to or bias the appropriate control values. Updating a group of parameters essentially offsets their current values by some positive or negative value (determined by moving one of the controls in the group). There are eight update memories.

Since you'll be using an external MIDI sequencer along with DMP7 PRO in order to automate the DMP7, a transport window is included in PRO. This has start, stop, pause, and rewind buttons for remotely controlling a sequencer from within PRO. Note that not all sequencers will respond to these controls. In our test (remember, we used two Macs), we found that Master Tracks Pro would respond to the start command only when synced to an external clock. Since PRO doesn't generate its own clock, this meant that we had to use a third piece of hardware as an external clock source. So we had the MIDI out from the PRO side of the Opcode Studio Plus Two interface going into a merger, which was also getting MIDI clocks from a drum machine. The merger fed into the Master Tracks side of the interface, while the Master Tracks outputs were being fed. . . . Oh, forget it. Suffice to say that the patching setup to accomplish all this was ridiculously complicated. What we should have used (and you should too, if you plan to use PRO) is a Southworth JamBox, which both merges and generates clocks. Digital Music Services tells us that they've prepared a booklet that diagrams all the necessary routings, so you should be able to bypass the brains-convolving-to-jello effect we experienced when we tried to figure out how to get all our cables connected properly.

DMP7 PRO keeps track of where you're at in a song by reading song position pointer data. In order for it to keep proper track of what bar/beat you're on, you've got to tell it what time signature the song is in (multiple time signatures require you to set the program to 1/4 and keep track of the number of beats). Each of the eight autolocation memories can be assigned to any bar/beat in a song. When that point is reached the settings are recalled automatically. Sets of eight autolocation memories can be saved in the autolocation memory bank. We initially wished that more than eight memories could be accessed at once, but found that calling up a new bank to get to more memories was quick enough. Unlike the other automation features, the autolocation memories will store settings for the entire mixer. No 36-control limit here.

DMP7 scenes, or the complete settings of all the parameters stored in memory, are saved in a scene bank by DMP7 PRO. Likewise, the automation memories are stored in automation banks. You can A/B any stored scene with the current scene in the mix editor. The comparison can be made either visually or aurally.

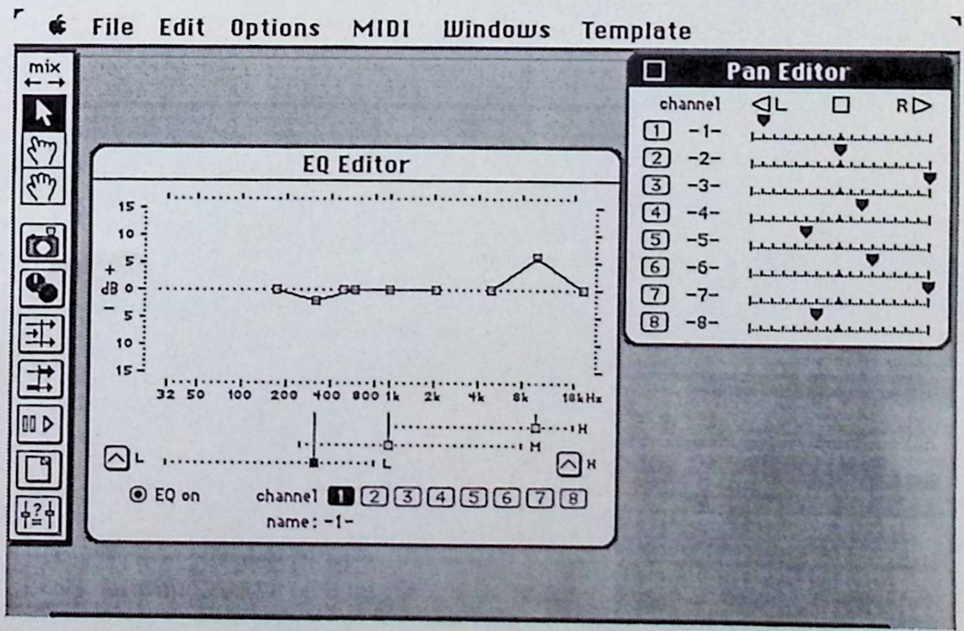


PRO's solo options window extends the DMP7's capabilities by allowing you to reconfigure the solo busses.

Other cool stuff that we haven't touched on includes graphic editing windows for altering EQ, pan, and compressor settings. Both the EQ editor and pan editor functions send out data that corresponds to the DMP7's data for these functions. In other words, the DMP7's panning controls only step the panning across 17 increments from left to right. However, mix editor window produces a full 128-increment panning signal, just in case Yamaha ever upgrades the DMP7 to respond to the full range. You would use the pan editor and EQ editor windows to conserve memory in your sequencer. We had some trouble turning the compressor off from the compressor editor window while an automated mix was in progress.

Conclusions. DMP7 PRO is as slick a graphic editing package as we've seen. Since the DMP7 is a mixer without a front panel and PRO is a front panel without a mixer, you've got your basic match made in heaven. Seeing the entire front panel of a DMP7 laid out in a sensible manner is very helpful. The automation tools and the enhancements to the mixer's capabilities (especially the ability to configure the solo busses), make life with a DMP7 a whole lot more convenient, and the DMP that much more powerful.

But the questions that should be in everyone's minds at this point go something like this: $395 for the front end of an automation package without the automation? What do you do if you don't already own a hardware sequencer? Should you run out and buy a second Mac? The answer, or so we're told, is no. Go out and get more internal RAM for your Mac so you can run DMP7 PRO and a "compatible" MIDI sequencer program simultaneously using MultiFinder (you'll need at least 2 Meg). If the word "compatible" sets off your skeptics' worrywart alarm bells, it should. So far, we're told that MidiPaint 1.04 runs with DMP7 PRO without a glitch. But we haven't had a chance to see this for ourselves, since version 1.04 of MidiPaint is newer than the version we reviewed back in Oct. '87. Q-Sheet is also supposed to work with DMP7 PRO and MultiFinder. And as more Mac software gets updated to MultiFinder-compatibility, you'll have more sequencers to choose to run with DMP7 PRO. Our advice—unless you've already got a hardware sequencer or a spare computer lying around, wait a little while. DMP7 PRO is just slightly ahead of its time—the rest of the software world needs to catch up with MultiFinder compatibility. Who knows, the wait may be over by the time you read this.



The EQ and panning graphic editing windows.

SHORT TAKES

DIGITAL MUSIC MX-8
MIDI PATCHBAY & PROCESSOR

ALONG THE LINES OF THE MAPPER, Voyce Music's LX4, and JL Cooper's MSB Plus, Digital Music's MX-8 acts as a MIDI thru box/patchbay while fulfilling a pretty wide range of MIDI processing needs. Any combination of routings and processing functions can be stored in any of 50 configurations. These can be accessed via the front panel or through MIDI program-change commands. (You are allowed to choose the program-change receive channel for each of the configurations.)

The MX-8 has six MIDI inputs. These can be assigned to a number of different destinations: The eight MIDI outputs, either of the two MIDI data processors, or a merged output of both processors. All patch configurations, which consist of routings and processing information, are done in an assign function mode and can be monitored and named in the 32-character LCD on the front panel. A special patch chain option, programmable in each configuration, allows you to send program-change commands from each of the eight outputs on separate MIDI channels.

POWER
MX-8
CURSOR
DATA ENTRY
FUNCTION
RESET

Digital Music MX-8 MIDI patch bay and data processor.

In each of the processors, a data filter allows selective filtering of note on/off, program-change, control change, pitch-bend, after-touch (mono and poly), system real-time, and system-exclusive messages. Controllers can't be individually filtered, however. MIDI delay is programmable in note values (sixteenth- or sixteenth-note triplet values) at a programmable tempo (30 to 240 bpm) or milliseconds (5 to 3000ms) and is assignable to any MIDI channel. (Sorry, there is no external clock sync.) The MIDI delay function encompasses note on, pitch-bend, after-touch, and control change messages. Up to seven "echoes" can be programmed, and a velocity offset function allows those echoes to crescendo or diminuendo to a specified velocity amount (+63 to –64 per repeat) over time. The MX-8's mapping function allows you to define up to three keyboard splits, with each of four zones being assignable to any MIDI channel. A transpose function allows you to transpose the input note data up or down more than five octaves (from +63 to –64 semitones). Also, a channel shift function allows you to offset MIDI channel (by incrementing channel assignments from one to 15) or re-route all messages from one specific channel to another while leaving messages on other channels unaffected.

Digital Music tapped their imaginations and included a couple of real hip velocity functions. Velocity limit acts somewhat like an audio signal limiter, limiting key-on velocities to a specified range. Also, a velocity cross-switch selects an alternate output channel when the key-on velocity exceeds a user-specified threshold—useful for triggering alternate sounds with harder attacks and brighter timbres. All of the processors' functions are really simple to program and can be used simultaneously.

Because MIDI delaying and merging can be rather taxing on the MIDI data buffer, the MX-8 uses dynamic filtering to keep the buffer from overflowing. At the point where buffered data requires more than 30ms to be output, the MX-8 starts thinning after-touch and pitch-bend messages. (Pitch-bend reset messages are passed.) Be advised, however, not to edit the processors' parameters while playing any of your input instruments. Although Digital Music informs us that the MX-8 sends out an all-notes-off command when a parameter change is made, not all instruments are guaranteed to read that message. We got a lot of stuck notes and eventually some locked instruments when editing, so be careful.

The power switch is on the front panel, along with a reset button (which serves as a panic button, sending an all-notes-off command on each MIDI channel, followed by an individual note-off for each note on each channel) and function, cursor, and data entry buttons. The power supply is a 9-volt adapter that gets plugged into the back of the unit.

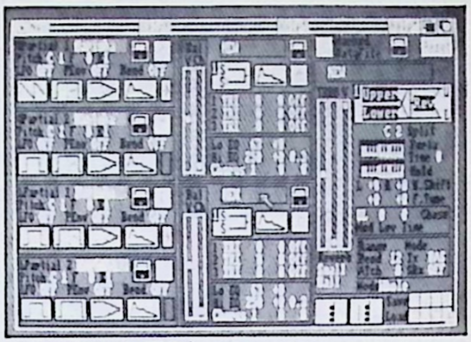
The MX-8 is friendly and easy to program. Perhaps best of all, it's less expensive than its counterparts. $395 is a very reasonable price for all of these features. —DL

Prices & Contacts

MX-8: $395.00. Digital Music, 5312-J Derry Ave., Agoura Hills, CA 91301. (818) 991-3881.

D-50 Master: $150.00. Sound Quest Inc., 5 Glenaden Ave. E., Toronto, Ontario M8Y 2L2, Canada. (416) 234-0347.

SOUND QUEST D-50 MASTER
EDITOR/LIBRARIAN FOR THE AMIGA



Sound Quest D-50 editor screen.

DRAGGING YOURSELF ACROSS THE Sahara, you see a vision in the distance. As you strain to get a better glimpse, it begins to come into focus. Could it be? After such a long wait, could it possibly be that music software is appearing for the Amiga? Yes, it is! Joining the growing throng around the oasis is Sound Quest with a series of editor/librarian programs for the Roland D-50 and MT-32, the Yamaha DX7II/7/100/27/21 and TX81Z, the Casio CZ series, and the Ensoniq SQ-80. They also have a generic librarian. This month, we take a brief look at D-50 Master.

D-50 Master is menu-driven; all entries, except for naming patches, are made with the mouse. The two modes of the program are librarian and patch edit. In patch edit mode, you can dump a patch from the D-50 or load it from disk and edit all patch parameters on the computer screen. You can change the value of any parameter by pointing to it, depressing the left mouse button, and moving the mouse from left to right. Envelopes for amplitude, pitch, and filter feature their own edit window, where you can make changes to either the line graph or the numeric values. You can open as many windows as will fit on the screen (our top score was 13 windows open at once) and edit any parameter you can reach with the mouse. When you change a value, it changes color from white to orange, so you can see at a glance what changes you've made. (The color changes back to white when you return it to its original value, which is very helpful.) You can link partials and tones together, so the changes you make to one will be duplicated in all the others which are linked. Using the mouse, you can play the current patch one note at a time, as a rising arpeggio, or as a chord.

For our review of D-50 Master, we used an Amiga 1000 with 512K of memory. While D-50 Master works on this computer, not all of its functions (patch slide, mix, and blend functions in the librarian mode) are accessi-

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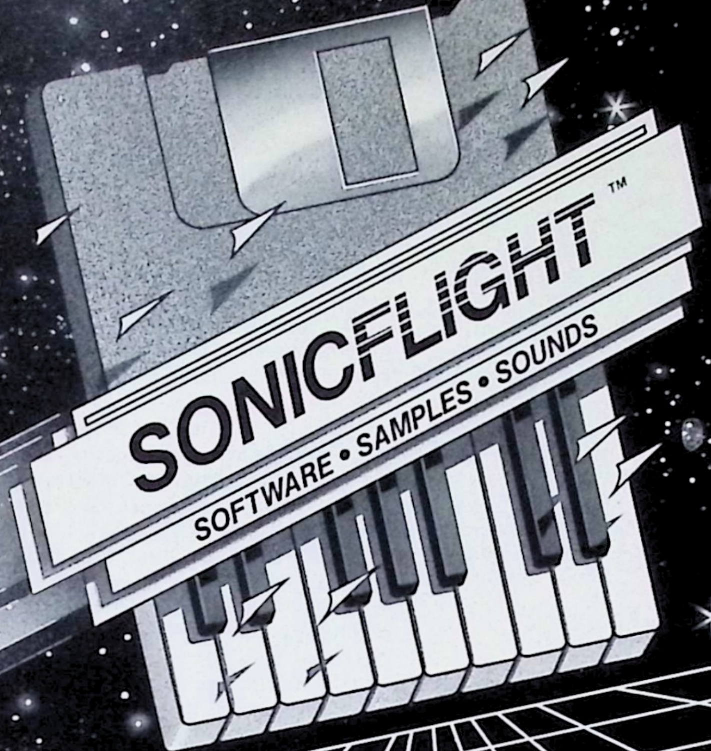

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ble unless you have at least one megabyte of memory (which is standard on the Amiga 2000). Owners of the Amiga 500 and 1000 should purchase memory expansion to use D-50 Master to its full potential.

During our testing, we got adventurous and downloaded five patches from the synthesizer into the computer, resizing all of their edit screens to fit on the computer display simultaneously. We could edit the parameters remaining in each patch's screen, and we could send the results to the D-50 to be heard. When we attempted to resize one of the edit screens back to its original size to see if we could edit all of its parameters, the computer told us it had insufficient memory and we lost that patch. We enlarged one of the remaining four and were able to edit all numerical parameters, but we were unable to view the envelope windows. Even though the computer took some time to keep all the windows updated, it did not crash, which was a good sign. Once again, with adequate memory, you won't have these problems.

In the librarian mode, you can load Sound Quest's FactoryBank file or a bank from your D-50. Sound Quest's manual fails to mention that you must hit the D-50's "enter" button after you tell it to dump bank data. Other than volume control, this is the only operation you must initiate at the D-50 control panel. With the patches in the bank displayed, you can click the mouse on a patch, and the second click will play a chord with that patch on the D-50. This works quickly, but sometimes the D-50 isn't quite ready to play the patch (for example, the reverb isn't set right or the envelopes don't respond correctly), so you have to click the mouse a third time to finally hear the patch properly. D-50 Master allows you to structure your own chord or sequence to audition a patch; the default audition is a 16-note chord. Sound Quest suggests that you edit the audition chord so that D-50 Master plays three or four notes, giving all the D-50 parameters a chance to be set for the audition. You can also edit a patch you have selected from the bank display. The patch slide, mix, and blend functions mentioned earlier allow you to choose two patches from the current bank and tell the computer to create a new bank of patches based on variations of parameters from the original two patches. Slide incrementally interpolates the values of the parameters between the first and second patches. Mix randomly selects parameter values from each original patch. Blend combines partials into various configurations.

D-50 Master is a fun and easy program to use, and it is effective in helping you program new voices on the D-50. —*MV*

LETTERS

Continued from page 11

Sure hope he can still play after doing that to himself.

Matthew Shelton
Atlanta, GA

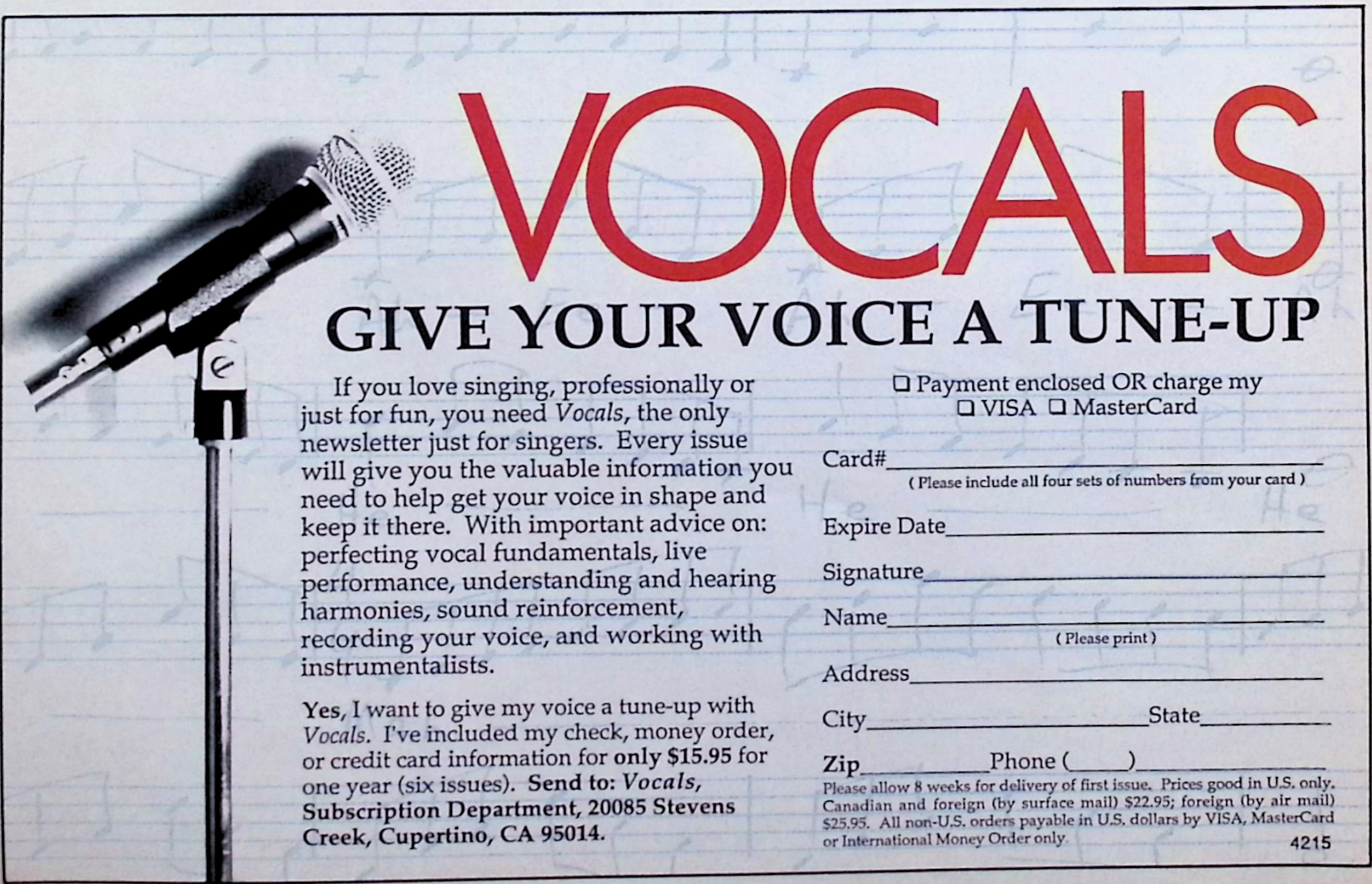
[As every fan of the Doctor knows, it takes hours of malpractice to impart that kind of expertise.]

T8 For Two

[We ran a letter from reader B.J. in our Jan. '88 issue, chronicling his or her love of the Sequential Prophet-T8. "Am I alone with this T8 obsession?" B.J. pleaded in conclusion. Apparently not.]

B.J.'s letter really hit home. I've been in love with the unit since I acquired it in '84, and was startled to find out that it was being discontinued only two years after its introduction. I strongly believe that the T8 is the best engineered product ever produced by Sequential. Its optical hammer-action wooden keyboard with polyphonic after-touch is the most accurate, expressive, and reliable I have ever encountered; only owners of the Synclavier II can claim a comparable experience. To this day the T8 is the only instrument I have found that can produce solo string and brass sounds with an accuracy approaching that of a sampler while still retaining its unique expressive capability. Thanks to an excellent implementation, the T8 also functions as my MIDI master controller. A ROM update available from Sequential adds MIDI clock to the sequencer, and replaces the system-exclusive message for the sustain pedal with a standard controller message, further enhancing the instrument's use as a master controller. The T8 will have a home in my studio for some time to come.

Brian Woodard
Rancho Palos Verdes, CA



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Buying or selling used instruments through our Classified Ads offers you convenience, a big marketplace, and a wide range of instruments and prices. However, buying mail order does have its drawbacks, too. Keyboard suggests the following guidelines to help the buyer and the seller in these transactions: 1) Get a written description of the instrument, which should include the serial number; 2) Get front and back photos of the instrument; 3) Get a written purchase agreement, with a 24-hour approval clause allowing the buyer to return the instrument for a full refund if it does not meet his/her reasonable expectations.

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Korg **Poly-800 MKII** owners! **Finally** new sound patches are available. Send $25.00 for cassette tape of 64 varied sounds or write for more information. Petra Data Systems, 3369 Tamarack Ave., Springfield, OH 45502.

Why Sample?? Livewire has professionally recorded samples for new **Ensoniq EPS, Mirage** and **Casio FZ-1.** Send $2.00 for complete listing, $5.00 for demo cassette. Details: send stamped, self-addressed envelope, specify sampler. Livewire Audio, Dept. K4S, PO Box 561, Oceanport, NJ 07757.

ESQ—Q-Spectrum—The Professional ESQ/SQ library against which all others are measured! Critics rave: "Innovative. . .Impressively huge and lush...Extremely useful sounds.". . .(**Keyboard** review Jan. '88). "Ultimate recommendation!" (Transoniq Hacker review). Two 80-voice "volumes", both complete assortments of sizzling **hot** acoustic and synthetic sounds: pianos, Hammonds, DX7s, analogs, **real** drums, basses, strings, percussion. 160-sound cartridge: ROM $79.95, RAM ($E^2$) $129.95! 80-sounds (Volume 1 or 2). Cartridge: ROM $44.50, RAM ($E^2$) $69.95. Cassette $29.95. **Blank** E^2 cartridges! 80-voice $44.95. 160-voice $94.95! Z-Spectrum—Ultimate Casio **CZ** club/Top 40 sounds! Lithium 64 RAM cartridge: $49.99! 64 superb **Poly/EX-800 (mkI) sounds: $14.95! Send check/money order, call for COD! Shipping $2.50. (Foreign $4.50). Demo tapes $5.50 (ppd., refundable) to: Patch/Works** Music Software, PO Box 450, Dept. KB, New York, NY 10024. (212) 873-2390.

TX81Z: 64 **quality** musical patches (no effects!) plus 48 superb performances $19.95 (US) (data cassette). Our celebrated 48-patch **DX21/27/100** compilation continues to elicit rave reviews. $15.95 (US). **FB-01/CX5MII** data cassette $19.95 (US). Free patches/information available. Inquire about guitar and wind controller volumes. Algorithm Musique, Box 135, 1215 Davie St., Vancouver, BC, Canada V6E 1N4.

Make Your MT-32 Sound Like A D-50! We have programmed many of the popular D-50 sounds as well as many new sounds into the MT-32. $35.00 for 128 sounds on disk. Specify Macintosh or Atari software. Ken Navarro, 5852 Oso Ave., Woodland Hills, CA 91367. (818) 716-6971.

Stop Buying Cartridges, QDs! Why fool with cassettes? Get **Sound Bank Series.** New MIDI software runs on IBM PC or Atari ST. Manage voice and performance data or banks, display/print/randomize/compare. Runs with newest Yamaha, Roland and Casio synths. Uses Macintosh-style menus, windows, supports all monitor types. $49.00 (specify synth/CPU) or $4.00 demo disk. Emax, ESQ-1 also available. **Southern Music Systems;** PO Box 112815; Carrollton, TX 75011 (214) 418-6534.

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ESQ-1: 80 voice RAM programmable cartridge loaded with 80 great sounds. MusicBank's Songwriter Series 1 & 2 including realistic percussion: snares, toms, hi-hat (open and closed), timpani, ride cymbal, and more. Other sounds include excellent acoustic simulations of horns, symphonic strings, reeds, winds, and many others! Useful keyboards and popular electronic sounds too. Call for more details: (408) 353-5040. Also available on data cassette. Visa and MasterCard accepted by phone. The MusicBank, 18522 Mt. View Ave., Los Gatos, CA 95030.

Sony PCM and **R-DAT Owners!!** Complete digital sample library: saxophones, brass, drums, harp, effects, D-50, more. Only $99.95. Free information: send stamped, self-addressed envelope, specify your synths and/or computer. Livewire Audio, Dept. K4D, PO Box 561, Oceanport, NJ 07757.

Technosis Enlightens The ESQ-1 And SQ-80! "This is the most professional package I've seen yet and it should set a standard for all other programmers. The voices are very impressive, there are really no apparent throwaways in the whole set, and the liner notes are an educational bonanza." Chris Barth, Transoniq Hacker, February '88. "...Very nice bass patches; nice fat analog sounds; effective drum sounds; THEFLY is almost worth the price of the package alone." Bob O'Donell, Music Technology, December '87. And now, killer SQ-80 voices!! Technosis, 3960 Laurel Canyon Blvd., Suite 353, Studio City, CA 91604-3791. (213) 656-3515.

Xpander/Matrix-12. Satisfaction Guaranteed! 100 single/20 multipatches. All musically useful; subtle acoustics, unique modulations, scorching leads, beautiful atmospheres. **Used professionally** in studios, film, and video. $25.00 plus $2.00 shipping. Bill Belote, 4450 Van Nuys Blvd. Suite 786, Sherman Oaks, CA 91403.

DX100 Owners: Tired of endless variations of factory patches? Prefer **quality** over quantity? 24 excellent 4-op sounds on data cassette for $13.00 plus $2.00 p & h. Sure, you can spend $20.00 for 288 sounds, but how many of them are useful? Hear what a DX100 can really do! Includes **"sampled sax", "talkbox"**, piano, bass, analog leads and other great sounds. Send check or MO to: J.T. Castiglia, 101-53 108th St., Richmond Hill, NY 11419.

Unicorn Performer Sequences: 2 stunning **classical organ** toccatas: 1-Eugene Gigout #4, and 2-Widor from 5th Symphony. Supplied on Mac disk, $45.00. Demo audio cassette, $10.00. Also **TX81Z organ stop patches:** 32 realistic church organ 'stops' ideal for voicing the above sequences, cassette $25.00. **Visa/MasterCard.** (206) 788-4295. Immediate shipping. Gemini Marketing, Inc., 60 Kennedy Dr., Suite D, Duvall, WA 98019-0640.

Ensoniq EPS Owners: Check out our new incredible sounds for your state-of-the-art instrument. Several sampled libraries now available include super percussion, rich analog sounds, hot new wave sound effects, and incredible acoustic instrument samples. Call or write now for info. Horizon Software, PO Box 289, Opelousas, LA 70571. (318) 948-9457.

Akai S900 **Big Band.** Separate muted and open trumpet and trombone, alto, and tenor **sections and solo** instruments. 3 disks, $22.00. Interlude Studio, PO Box 122, Shawboro, NC 27973.

1,500 Samples! Vol. 1: 1,000 multi-sampled sounds: strings, brass, D-50, DX7II, Matrix, $19.95! **Vol. 2:** 500 drum & percussion FX, $17.95! ($2.50 p/h on each cassette.) All recorded onto quality Maxell cassettes. Specify Dolby or dbx. **Triple S Productions,** PO Box 121465, Nashville, TN 37212-1465.

Rhythm libraries: **RX5/RX11/RX15/RX21, TR-505/TR-707/TR-909, DDD-5.** Each tape contains hundreds of new patterns and fills programmed with a "human" touch—featuring: rock, pop, techno, dance, hits, jazz, blues, country, swing, funk, fusion, Reggae and Latin programs. $30.00 each complete with extensive application materials. Free 1st Class shipping. **Music Design,** Box 28001, Crystal, MN 55428. (612) 537-5457. Catalog and program lists available.

Roland Owners. New!! **MT-32** 64-patch disks for ST/C-64/Mac. Nuke those wimpy factory sounds! Volume I: D-50ish sounds, bells, fatsynths. Volume II: piano, brass, bass, drums. Each volume $17.95, both $29.95. **"D-50 Dreams:"** 64 incredible sounds on data sheets, disks, RAMcards, $29.95. D-50, MT-32 demonstration cassettes, $5.00. Details: Call! Livewire Audio, Dept. K4R, PO Box 561, Oceanport, NJ 07757. (201) 870-3115.

Roland D-50 professional musicians, recording artists and programmers are praising the **original** sounds of **New Man Studios.** Programmer James Newman, appearing in November Keyboard Discoveries, presents: The Spectrum, Orchestral, and Rock Blocks, new Blocks are in production. Formats: ROMs, $89.00, your RAM or disk: MC-500, Atari 1040-ST (Dr. T's), Macintosh (Opcode), $25.00. Data sheets, $25.00. Add $2.00 p/h US, and $5.00 outside US. New Man Studios, PO Box 1235, McMinnville, OR 97128.

Leigh's Computers has the world's largest selection of MIDI software. See our ad under "Retailers!" We have all the programs for **your** computer and synth in stock! We ship world wide! Call (212) 879-6257. Now!! Leigh's Computers, 1475 3rd Ave., New York, NY 10028.

Hot **new** sampled disks for **Emax/Ensoniq EPS.** 1) 50 snare drums. 2) 50 bass drums. 3) Ambient pads. 4) Power leads. 5) Fat basses. Created at professional studio. $15.00/disk, 5 for $50.00. Include $3.00 p/h. Omni Mode Producers Group, 12125 S.W. 107 Ave., Miami, FL 33176.

Real Kuhl Productions is proud to introduce studio samples for the **Korg DSS-1** and **Casio FZ-1.** For **DSS-1: MIDI MIDI,** Enhanced **ESQ-1,** Bowed Strings, **CD Drums/TR-606, DX7** Highlights. Each DSS-1 disk is $20.00 or all 5 for $80.00. For **FZ-1: Beat Box, FZ-MIDI MAX, rock, grand piano,** bowed strings, **D-50** Highlights. Each disk is $25.00 or all 5 for $100.00. **High bias demo tape** for only $2.00. Specify DSS-1 or FZ-1 tape. **We pay shipping on all orders!** Please pay by check or money order only. WA residents add 7.9% state tax to all orders. Real Kuhl Productions, 3520 N.E. 153rd, #307, Seattle, WA 98155.

Why program? Livewire has professional affordable synthesizer sounds for **Memorymoog,** Casio **CZ,** Ensoniq **ESQ-1.** Choose data sheets, cassettes, cartridges, disks. CZ demonstration cassettes: $5.00. Details: send stamped self-addressed envelope, specify synth. Livewire Audio, Dept. K4M, PO Box 561, Oceanport, NJ 07757.

TX81Z Sounds By Cesium! We have 160 sounds for $25.00. All are useful. You can't go wrong with sounds by Cesium. Free listing. Cesium Sound, 1640 Walnut St., #C, Berkeley, CA 94709. (415) 548-6193.

Roland D-50. Sets of 64 unique and exciting sounds, now at a new, low price. "Alternative Soundscapes Volume I" and "Volume II," either volume only $15.00 on data sheets or loaded to your RAM card. Send SASE for other formats available. All orders shipped next day by First Class Mail. Now accepting orders for "Alternative Soundscapes Volume III," to be shipped April 15th. Day Star Enterprises, PO Box 2387, Amarillo, TX 79105.

DX7II, DX7, TX7 sounds. 14 banks, 448 sounds. The best selected from over 3,000 patches. Many formats available. DX7IIFD disk, QX1, Apple Pro, DXdroid, TX7 tape. Send $20.00 and format to Roxies Best, 9705 W. Wisconsin Ave., Wauwatosa, WI 53226. (414) 645-7600.

DSS-1 Sound Disks. All four systems used. 128 sounds. Designed by NYC producer. $35.00 for minimalist version disk, $30.00 for synth vision textures disk. Earnest Woodall, PO Box 411, Huntington Station, NY 11746-0333.

Casio FZ-1 Sampler. 5 sound disks each loaded with 8 banks of great sounds. 5 disk library $35.00. Blank 3½" FZ-1 disks, $3.00 each. Send check or money order to: Jeffery A. Yentzer, 84 Willis Pl., Canandaigua, NY 14424. (716) 394-6214.

Introducing: **D.R.U.M.S.** Three Commodore 64/128 programs in one—designed to make you MIDI drum machine come alive! (1) **Sequencer/Editor** equips you with possibilities no allowed with most drum machines—real tim dubbing, velocity editing for every note, timin changes and memorized instrument volume levels are a few of its capabilities. (2) Intelligent **Librarian** with a unique "card catalog" option for finding your song. (3) **Performer** designed for on-stage use—ultra-fast song loading (about 5 seconds), access to hundreds of songs at one time, memorized tempos and MIDI channels, optional "canned" endings, no more loading tapes on stage! Supports Passport-type and Sequential-type MIDI interfaces. $65.00 complete with lots of pre-programmed songs and extensive application materials. Free 1st Class shipping. **Music Design,** Box 28001, Crystal, MN 55428. (612) 537-5457. **Software you'll use everyday!**

Announcing: The ultimate **TX81Z** collection. Features: (1) **128 New Voices**—emphasis on realistic instrument and percussion sounds. (2) **96 Performances**—splits, "big sounds," sections, drum sets, f/x splits and more. (3) Four banks of **F/X**—chord voicings, traditional harmony, jazz voicings, etc. (4) New **Micro-tuning Tables**—from the Wendy Carlos album "Beauty and the Beast." $25.00 (on cassette) complete with extensive application materials. Free 1st Class shipping. **Music Design,** Box 28001, Crystal, MN 55428. (612) 537-5457. Catalog and sound list available.

Yamaha owners: Livewire has professional synthesizer sounds for **all Yamaha DX/TX** synthesizers. Data sheets, data tapes, disks, from $15.95. FB-01/DX21/TX81Z demo: $5.00. Gargantuan DX7/TX7 demo: $8.00. Details: send stamped self-addressed envelope. Livewire Audio, Dept. K4Y, PO Box 561, Oceanport, NJ 07757.

Continued

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Oberheim Xpander/Matrix-12. Hot professional programs for live, studio, movie scoring. 120 on cassette, $25.00. **Yamaha TX81Z/DX100/21/27:** 64 expertly created sounds on cassette, $20.00. All orders add $3.00 p/h. New **Korg DSS-1:** Fat MIDI stacks on disk. 64 great sounds, $30.00. **DSS-1** easy programming guide book. Includes programming tips and sound transfers from disk to disk, $9.00. D.R.E.T. Technologies, 6725 N.W. 174 Terr., Suite L, Miami, FL 33015.

Casio CZ Owners: 2 sets of musically useful programs. 32 sounds per set. **$12.95/set. No** sound effects. Data sheets only. Same day shipping. 12 years programming experience. Windsor Recording Studio, 22 Race Track Rd., East Brunswick, NJ 08816.

SQ-80: 1,728 sounds on one SQ-80 disk, $99.00 (designed on the ESQ-1). **"The Worx:"** 1,720 sounds for the **ESQ-1,** cassette and other formats, $99.00. Demo cassette, $5.00. **Emax:** 125 disk library, $439.00/entire library; $399.00/100 disks; $225.00/50 disks; $74.95/10 disks; $9.95/disk; song demo cassette, $5.00. Customer and dealer referrals upon request. **Sound sampler:** Over 1,000 samples on Maxell XLIIS-90. Excellent brary and samples for any sampler. Professional uality results, $25.00. **Mirage:** 50 disks available. $9.95/disk; $225.00/entire library. Demo assette, $5.00. **DX100/21/27/27S:** 720 sounds, assette $39.95. **JX-3P:** 1,280 sounds, cassette $30.00. **TR-505:** 1,248 patterns, cassette $30.00. **TR-707:** 1,024 patterns, cassette $30.00. Softworx MIDI Systems, Sound Dept., 8402 Clover Hill Loop, Bayonet Point, FL 34667. (813) 862-6032.

New Voices For MIDI people. **DSS-1:** 128 voices/$25.00 (disk). **Prophet-VS:** 100/$35.00 (GenPatch ST disk, includes 32 new waveforms). **D-50:** 64/$30.00 (Dr. T's or GenPatch ST disk). **Prophet-2000:** 50/$85.00 (ten disks, expanded memory version). **CZ-Series:** 128/$20.00 (sheets or cassette). **SP-12:** 48/$45.00 (five disks). **DX7/DX7II/DX7S/TX7/TX802:** 128/$20.00 (sheets or C-64 disk). **FB-01:** 128/$20.00 (sheets). **DX100/27/21:** 176/$25.00 (cassette or C-64 disk). **TX81Z:** 128/$25.00 (cassette, includes 96 performances). **Xpander/Matrix-12:** 100/$25.00 (cassette). **Matrix-6/6R:** 100/$25.00 (cassette). **Juno-1/2:** 64/$20.00 (sheets or cassette). **Juno-60:** 56/$20.00 (cassette). **Jupiter-8:** 64/$20.00 (cassette). **Chroma Polaris:** 132/$25.00 (cassette). **Prophet-5:** 40/$20.00 (cassette). **Prophet-600:** 100/$25.00 (cassette). **DW-8000:** 128/$20.00 (cassette). **MemoryMoog:** 100/$20.00 (cassette). Programmers include Richard Viard, Walter Whitney, Donald Fish, Timothy Hunter, and Sebastian Niessen. Free 1st Class shipping. **Music Design,** Box 28001, Crystal, MN 55428. (612) 537-5457. Catalog and voice lists available.

Korg DS-8 Owners: 50 musically useful programs that give you the expressive power of a DX. These are programs to make music with, not sound effects. Data sheets only. **$19.95.** Same-day shipping. Windsor Recording Studio, 22 Race Track Rd., East Brunswick, NJ 08816.

840 New!! ESQ-1/SQ-80 patches. $19.95/280, $49.95/840. **5,000 DX7IIFD/DX7/TX7** patches $29.95. **1,028 new TX81Z/FB-01/DX100/21/27.** $19.95/352, $49.95/1,028. P/h $2.00. Music World, 617 Panorama Dr., Grand Junction, CO 81503.

Are We Crazy? You can now own world famous **Patchman Music** studio-tested pro patches for the insane price of $10.00 per volume!! **ESQ-1 Volumes** I-IV: 40 patches/volume. Cassette. **CZ Series Volumes** I-IV: 42 patches/volume. Databook. **DX100/27/27S/21 Volumes** I, II: 48 patches/volume. Databook or cassette. **Poly/EX-800 Volumes** I, II: 64 patches/volume. Databook or cassette. **DX7:** 64 patch databook. Application tips included with each volume. Please specify instrument, volume and format. **Patchman Music,** 2043 Mars Ave., Lakewood, OH 44107.

Korg **DW-8000, Poly-800, DS-8** owners: **why program?** Livewire's professional alternative synthesizer sounds are only $17.95. Unsure? DW/EX-8000, DS-8 demonstration cassettes: $5.00. For free details, send stamped, self-addressed envelope. Livewire Audio, Dept. K4K, PO Box 561, Oceanport, NJ 07757.

DSS-1 users, **don't be losers!** Forget thin, weak factory sounds. Check out the **Superdisc** with **analog** VCO synth sounds, **harmonic synthesis, digital,** and **sampled** basic **performance** voices. **Finished** disks $25.00 w/voice directories. Demo cassette $5.00. Dave Long, 1400 Banana Rd., Suite 76, Lakeland, FL 33809. More disks coming soon! **Ask for the Superdisc.** We do custom programs. (813) 859-1578 or (904) 264-3158.

Free DX7IIFD patches. 640 sounds plus 50 performances. Includes printed list for each bank of **Super Sounds.** Also available for **Patch Master.** Send $7.50 (p/h) to: Keystone Music, 508 Gralan Dr., Lancaster, PA 17601. Offer exp. 5/30/88.

ESQ-1/SQ-80 friends. Know what you're buying! Pick what you want from our **Mix and Match Voice Library.** 180 proven sounds with deep layers. Custom volumes of 40 on sheets, cassette, SOS/Blank diskettes only **$15.00.** Now any 80 on erasable RAM just $55.00. Write/call for **free sample** and sound list, $3.00 for demo cassette. **New:** 64 Roland **D-50** patches. Hear the PCMs! We'll load your RAM: $25.00. **Still Voice Audio,** 3041 Sumter Ave. So., St. Louis Park, MN 55426. (612) 927-0451.

D-50 Sounds By Cesium! Do yourself a favor. You're going to hear about these sounds eventually anyway. We have two hot volumes on ROM cards for $50.00 each or RAMs for $90.00 each. Add $2.00 shipping, CA residents add 7% tax. Sound list $1.00. Cesium Sound, 1640 Walnut St., #C, Berkeley, CA 94709. (415) 548-6193.

Roland Owners: Why program? Livewire has professional synthesizer sounds for **D-50, Jupiter-6,** all **Junos, JXs** and **new MT-32.** JX, Juno-1/2, D-50 & MT-32 demonstration cassettes: $5.00. Details: send stamped, self-addressed envelope. Livewire Audio, Dept. K4R, PO Box 561, Oceanport, NJ 07757.

Attention ESQ-1 And SQ-80 Owners. De Rio Productions presents their '88 product line. **ESQ-1 A.** Songwriters Series I. **B.** E-Z Trax Collection (on data cassette). **SQ-80 A.** Elite Collection. **B.** Avante Garde Collection (on disk). Each collection contains 160 original studio-quality patches (**not factory edits**) for $24.95. **ESQ-1 demo** $5.00. **SQ-80 demo disk** $7.00. Send check or money order to: De Rio Productions, 26 Bradfield Ave., Toronto, Ontario, Canada M8Z 2A3. (416) 259-5674.

OTHER

Singers!! Hundreds of background tracks! Top **chart hits.** Rock, blues, country, standards, gospel. Great low-budget **demos! Free catalog. Singing Source,** 23530 Platina, Suite D, Valencia, CA 91355.

MC-500 owners: Over **700 cover songs** (will trade). Great **R&B dance tunes/'50s, '60s, '70s rock & roll classics/**ballads. . .custom programming for live acts. Parker Adams, 930 Hartzell, Pacific Palisades, CA 90272. (213) 459-0160.

Make Money Composing Jingles. Save yourself years of "hard knocks." Send $10.95 for how-to book. Jingle Composer, Dept. K-882, PO Box 53, Harrison, NY 10528. **Act now!**

Discovered in Keyboard Magazine, **Tom Parsons** presents **"Aesthetics,"** a collection of twelve sketches for synthesizers on chrome cassette. **Special offer** for Keyboard readers, $8.00 includes p/h. Tom Parsons, 81 B Cedar, Park Forest, IL 60466.

Attention Songwriters/Performers: Finally an inexpensive way to have your demo critiqued by professionals. For free information write: Grand Staff Music Managers, PO Box 11515, Dept. K, Atlanta, GA 30355.

New CZ Patches Every Month! Join the CZ Sound Users' Group and receive a one year subscription to: **CnewZ monthly newsletter** containing programming tips, hot synth info., and **10 studio quality patches per issue** from our extensive library. Clip this ad and receive **40 bonus sounds.** Casio, Inc. gives us their full support! Send $25.00 to: **CZSounds,** 100 N. Whisman, Suite #201, Mountain View, CA 94043.

Wanted: MC-500 song sequences of popular songs! All categories accepted! Top prices paid! Send demo disk (ten song minimum) and song list to: Larry Lee, 322 18th, Box 678, Stambaugh, MI 49964.

Dig Out "Impossible" Licks with new two-speed Marantz cassette recorder! Play half-speed for easy learning (lowers octave). Varipitch "tunes" recorder to keyboard. Easy review. Call for price or write for catalog. **Ridgerunner,** Dept. KB-407, PO Box 122115, Ft. Worth, TX 76121. (817) 731-7375. MasterCard, Visa, Amex.

Musicians: Selecting professional **high quality pianists, keyboardists, technicians** and **presentors** to join job-oriented **network.** Send tape and letter, include musical background and experience. M.G. Network, PO Box 160310, Cupertino, CA 95016-0310. Send SASE for complimentary issue of MG Network newsletter.

Wanted: Computer Musicians!! For large MIDI database, to receive **free** MIDI news, new product releases, best buy recommendations, BBS listings, much more. ManyMIDI Products, PO Box 2519-KB16, Beverly Hills, CA 90213. (213) 650-6602.

Music Opportunity/Record Contract. We will present your demo-tape to major record executives. Service **free** if not accepted. 25 years experience in industry. For details, SASE to: Milestone Media, Dept. K, PO Box 869, Venice, CA 90291. ■

1988 $3.50

- ☐ **KM-8801: ON STAGE SPECIAL: Soundpage: Mike Oldfield;** On tour with Michael Jackson, Madonna, Kitaro.
- ☐ **KM-8802: Stewart Copeland; Soundpage: David Frank;** Little Richard, Cabaret Voltaire.
- ☐ **KM-8803: David Foster; Soundpage: Reader Tape Winner;** Scritti Politti, 19-Tone Temperament.

1987 $3.50

- ☐ **KM-8701: EXPERIMENTAL MUSIC SPECIAL, Soundpage: Avant-Garde Sampler,** Brian Eno, John Cage.
- ☐ **KM-8702: Frank Zappa, Soundpage: Frank Zappa,** Tony Banks, George Shearing, Lounge Lizards.
- ☐ **KM-8703: Paul Shaffer, Soundpage: Reader Tape Winner,** Larry Fast, Promote Your Band.
- ☐ **KM-8704: Philip Glass, Soundpage: Philip Glass,** Tax Laws, Successful Arranging, NAMM Report.
- ☐ **KM-8705: Jam & Lewis, Soundpage: Tom Coster & Steve Smith,** New Gear II, Kitaro, Arranging.
- ☐ **KM-8706: Special Issue: Using Sequencers—Basic & Advanced Applications, Soundpage: Jan Hammer.**
- ☐ **KM-8707: Bruce Hornsby, Soundpage: Sergey Kuryokhin,** Keyboards In Russia, Wind Synthesis.
- ☐ **KM-8708: Jeff Lorber, Soundpage: Ursula Oppens,** The Cure, Electronic Record Labels.
- ☐ **KM-8709: Michael Omartian, Soundpage: Brian Banks & Anthony Marinelli,** Yamaha DX7II User's Guide.
- ☐ **KM-8710: Miles Davis, Soundpage: Freff,** Prophet 2000 Programming Clinic, John Astley.
- ☐ **KM-8711: Todd Rundgren, Soundpage: Roger Powell,** Prince and Cameo Transcriptions, MIDI Mixing.
- ☐ **KM-8712: Accordion Power; Soundpage: Stanley "Buckwheat" Dural;** David Benoit, Poll Winners.

1986 $3.50

- ☐ **KM-8602: Nick Rhodes, Soundpage: Reader Tape Winners,** Sci-Fi Soundtracks.
- ☐ **KM-8604: Simple Minds' Michael MacNeil, Soundpage: Sorabji,** Jean-Luc Ponty, NAMM Report.
- ☐ **KM-8605: Ivo Pogorelich, Soundpage: Ralph Grierson,** Sequencer Roundtable, David Frank, Wally Badarou.
- ☐ **KM-8606: HOME RECORDING SPECIAL, Soundpage: Steve Porcaro & Amin Bhatia,** Setting Up A Home Studio, Tech Specs, Outboard Gear.
- ☐ **KM-8607: Lyle Mays, Soundpage: Lyle Mays,** Terry Riley, Keith Emerson, Gigging In A Show Band.
- ☐ **KM-8608: Alan Parsons Project, Soundpage: Larry Fast,** Samuel Sanders, Keyboard Amplification.
- ☐ **KM-8609: Keith Jarrett, Soundpage: Igor Kipnis,** New York Sessions, New Gear, Art of Noise.
- ☐ **KM-8610: Depeche Mode, Soundpage: Jim Cox,** Nashville Scene, Roland JX Programming.
- ☐ **KM-8611: Jonathan Cain,** Wendy Carlos, Mirage Programming, Michel Petrucciani. No Soundpage, $2.00.
- ☐ **KM-8612: Roy Bittan, Soundpage: T Lavitz,** Earl Wild, Tomita, Strange Synthesizers, Fred Mandel.

1985 $3.50

- ☐ **KM-8501: Cecil Taylor, Soundpage: Howard/Porcaro/-Paich,** 10-Year Column Index.
- ☐ **KM-8502: Seth Justman, Soundpage: Hugh Le Caine,** Clare Fischer, Jerry Goldsmith, Billy Cobham.
- ☐ **KM-8503: BACH SPECIAL, Soundpage: Dolby/Duke/Williams,** Keith Jarrett, Philip Glass, Musical Tributes.
- ☐ **KM-8504: Daryl Hall, Soundpage: Suzanne Ciani,** Commercial Synthesis, " 'Round Midnight."
- ☐ **KM-8505: Howard Jones, Soundpage: Vocoder,** Build A Vocoder, Christopher Hogwood, Kashif.
- ☐ **KM-8506: SYNTHESIZER PROGRAMMING SPECIAL, Soundpage: Michael Boddicker.**
- ☐ **KM-8507: Kate Bush, Soundpage: Patrick Moraz,** Dave Grusin, Lennie Tristano, IRCAM In Paris.
- ☐ **KM-8508: KEYBOARDS IN JAPAN SPECIAL, Soundpage: Isao Tomita,** Japan's Synthesizer Manufacturers.
- ☐ **KM-8510: 10th Anniversary Issue - Chick Corea, Soundpage: Chick Corea.**
- ☐ **KM-8511: Jerry Harrison Of Talking Heads, Soundpage: Mark Isham,** Tears For Fears, Bernie Worrell.
- ☐ **KM-8512: Future Of The Piano, Soundpage: Dave Stewart & Barbara Gaskin.**

1984 $3.50

- ☐ **KM-8401: George Winston,** Warren Zevon, Column Index, Malcolm Cecil, Jimmy McGriff.
- ☐ **KM-8402: Lead Synthesizer:** Build a Ring Modulator, Jazz Trios, Gray Market, Peter Serkin, Alan Howarth.
- ☐ **KM-8403: Josef Zawinul,** Ray Charles, Sight-reading for Accompanists, Keyboard Rental Companies.
- ☐ **KM-8404: Joe Sample,** NAMM Show Report, Corea Solo Transcription, Lorin Hollander, Dave Formula.
- ☐ **KM-8405: Nick Rhodes (Duran Duran),** Terry Adams, Chick Corea Solo, Home Recording Tips.
- ☐ **KM-8410: IMPROVISATION SPECIAL: Soundpage & Transcriptions: Denny Zeitlin.**

KEYBOARD BACK ISSUES

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